

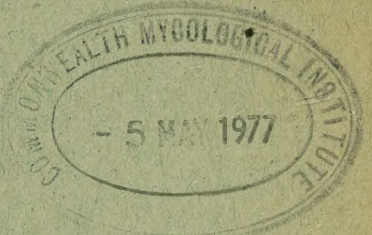
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MAURITIUS

Annual Report
OF THE
Ministry of Agriculture
AND
Natural Resources
for the year 1973

No. 27 of 1976



PRINTED AND PUBLISHED BY
L. CARL ACHILLE, GOVERNMENT PRINTER,
PORT LOUIS, MAURITIUS
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THE MINISTRY OF AGRICULTURE AND NATURAL RESOURCES
AND THE ENVIRONMENT

(Agricultural Services),

Reduit,

15th May, 1975.

SIR,

I have the honour to submit the Annual Report of the Agricultural Services for the year 1973.

I have the honour to be

Sir,

Your obedient Servant,

B. D. Roy,

Chief Agricultural Officer.

THE HONOURABLE THE MINISTER OF AGRICULTURE

AND NATURAL RESOURCES AND THE ENVIRONMENT,

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

AND THE ENVIRONMENT,

PORT LOUIS.

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Annual Report of the Ministry of Agriculture and Natural Resources (Agricultural Services) for the year 1973

I. Agricultural Services

1.11 As in the past years, the policy has been the maximum utilization of our land and water resources. The Ministry's main concern has been the development of agricultural industries, through research and extension on crops as well as on livestock with a view to attaining self-sufficiency wherever possible

1.12 The Agricultural Services of the Ministry of Agriculture and Natural Resources comprised Divisions with officers of the Scientific grades, officers of the Technical grades and other officers, excluding the administrative, executive and clerical grades and finance and store officers. Of these, there were eight vacancies at the close of the year, compared to 87 in 1972.

1.13. The work of the Agricultural Services is broadly divided into:—

- (a) applied research and development—to study and develop crops and livestock in the various environmental conditions obtaining in Mauritius and Rodrigues;
- (b) extension—to advise and assist farmers with a view to their obtaining the maximum productivity and economic returns from their farms.

1.14 The Agricultural Services continued to provide the essential services to the sugar industry, through the Cane Planters and Millers Arbitration and Control Board operated under the Sale of Canes (Control) Ordinance, 1964. It regulates the sale and purchase of sugarcane. It also provides an Extension Service for small sugarcane planters below 100 arpents. Some 37,759 tests were carried out on planters and miller/planters' sugarcane at 21 factories. Seventeen protests were received in respect of the final assessment for the 1972 crop, 6 from Co-operative Credit Societies and 11 from groups of planters. The Board maintained its previous assessment in all cases except one. Following a protest made against the method of computing the Road Rates, the Board decided to review the present method with the assistance of accountants representing all the associations concerned with the sugar industry. Three applications for changes of delimitation of factory areas were received by the Board. One was rejected and two were postponed to the following year. Thirty two permits were issued to middlemen. 11,150 contracts were in force covering some 31,200 planters. The number of planters who failed to enter into contracts before the 31st May was 322 compared to 264 in 1972. The number of weighbridges in operation was 84 compared to 86 in 1972. All weighbridges were tested for accuracy before the crop. Seven were found incorrect and were re-tested until accuracy was obtained. They were again tested during the crop and found correct. 4,299 surprise checks were carried out during the crop.

1.15 The total average under sugarcane was 207,029 arpents of which 191,822 arpents were harvested, compared to 205,240 arpents and 190,150 arpents respectively in 1972. 718,464 metric tons of sugar were produced, compared to 686,366 metric tons in 1972. 686,603 long tons of sugar were exported of which 380,000 long tons were sold at the negotiated price of £57 per long ton. 35,776 long tons of sugar were consumed locally. The United Kingdom was the largest customer taking 380,000 long tons followed by Canada taking 189,669 long tons, U.S.A. taking 38,600 long tons, U.S.S.R. taking 12,200 long tons, Iran taking 12,364 long tons, Indonesia taking 12,402 long tons, Yemen taking 4,781 long tons, South Vietnam taking 12,599 long tons, Iraq taking 11,368 long tons, Malaysia taking 12,600 long tons and Seychelles the remaining 20 long tons. The yield of sugar per arpent was 3.75 metric tons compared to 3.61 metric tons in 1972. Eight sugarcane varieties, namely: S.17, M.13/56, M.93/48, M.377/56, M.442/51, M.202/46, M.31/45 and M.351/57 accounted for 89 per cent of the crop. 184,842 metric tons of molasses were produced and 185,154 metric tons were exported. About 8,400 metric tons of molasses were used in the manufacture of rum and various alcoholic products. The total production of alcohol reduced to 100° G.L. was about 1,767,457 litres of which 183,432 were exported.

1.16 The close liaison established between officers of the Agricultural Services and those of the Mauritius Sugar Industry Research Institute was maintained. The research findings of the Institute were made available to the staff of the Agricultural Services through a series of lectures given by the staff of the Institute during the year as well as by the individual contacts between officers.

1.17 The Ministry continued to direct the activities of the three Committees administering the Sugar Industry Rehabilitation Fund. The Sugar Planters Rehabilitation Fund continued to operate and manage the Mechanical Pool which is organised to clear and destone land planted under sugarcane. The Fund operated the Pointe aux Sables Cane Nursery to provide planters with planting material free of diseases and pests and planting material of newly released varieties.

1.18 The Tea Industry was controlled by the Tea Control Board, which held regular meetings throughout the year. The Board determined the minimum and the final prices to be paid to planters for green leaf by the factories. The Board was also concerned with reviewing the existing legislation. The compilation and issue of quarterly and annual statistical reviews were continued.

1.19 Eight tea factories operated during the year and they all showed a decrease in production over the previous year. The decrease was particularly marked at Nouvelle France Tea Factory, being 41 per cent over the previous year.

1.20 The production of the eight factories was 4,078,943 kgs of made tea, a decrease of 12.8 per cent over the previous year. About 86 per cent of the tea was exported.

1.21 The control of the tobacco industry is vested in the Tobacco Board which purchases, processes and stores all leaf produced and provides at the same time an extension service to tobacco producers. Research services are provided by the scientific and technical staff of the Ministry of Agriculture and Natural Resources at the Richelieu and Pamplémousses Experiment Stations. These stations are also responsible for the production of seeds of all commercial varieties. The acreages under flue-cured Virginia and air-cured Amarello varieties were 785 arpents and 287 arpents respectively, compared to 763 and 269 arpents in 1972.

1.22 Production of air-cured Amarello tobacco accounts for about 28 per cent of the total. During the year, 659 metric tons of tobacco of all types were produced from 1,067 arpents compared with 523 metric tons from 1,032 arpents in the previous year. Usings of domestic leaves by the two manufacturers were 677 metric tons compared with 614 metric tons in the previous year. The Consolidated Tobacco Corporation Ltd. ceased operation. 50.8 metric tons of tobacco leaf were imported compared to 43.5 metric tons in 1972.

1.23 The Agricultural Division undertook agronomic trials in rice, tobacco, soyabean, garlic, ginger, peas, onion, cabbage, cauliflower, tablebeet, carrot, broad beans, tea and citrus. A rice variety trial to compare six varieties conducted at F.U.E.L. showed that none of the varieties was superior to the control variety IR 532-208. Fertilizer trials carried out at the same site showed that an increase in nitrogen at any level of P_2O_5 and K_2O under investigation did not result in a significant increase in paddy yield of variety IR 532-208.

1.24 It was evident from trials conducted that the tobacco varieties Kutsaga El, Kutsaga E2, S.C.66 and N.C. 95 produced leaves of higher quality than the control variety Yellow Mammoth but the first two varieties were found to be more susceptible to black shank and nematode infestation than varieties S.C.66 and N.C. 95.

1.25 Inoculation of Soyabean was found to have a beneficial effect as it increased seed yield. The pea variety, Pigeon pea, proved to be the best seed yielder, and it was found to be suitable for the production of tender pods and peas. The onion variety, Local Red, gave its best yield when sown in March. Varieties Tropicana Hybrid and Gizeh had two suitable sowing months, for optimum yield, namely February and October. Varieties of cabbage, cauliflower, tablebeet, carrot and broad beans imported from France were screened for eventual selection.

1.26 The tea clonal work and experiments on tea cultural practices were in progress. In the field of citrus production, experiments on stock-scion compatibility continued at Barkly and Richelieu Experiment Stations.

1.27 The Animal Production Division was responsible for research in animal production. A small holding dairy settlement scheme was in progress at La Brasserie. Feeding milch cattle with molasses/bagasse mixture at two levels of roughage did not give encouraging results. For calf rearing, a restricted suckling method was found to be more economic than the traditional bucket feeding method.

1.28 Comparison of two types of fattening rations, one with liquid molasses, urea and fishmeal at five different levels of maize and the other with molasses and groundnut cake at the same five different levels of maize showed that the first ration was more efficient. Also, the addition of increasing amounts of maize did not significantly increase the average daily liveweight gain.

1.29 Performances testing of four *Bos indicus* Bulls showed that the performance of bull No. 51 was superior to that of the other bulls. The experiment on the use of untreated and steam treated bagasse pith as a roughage source for fattening young bulls on a diet of high level of liquid molasses gave interesting results. *In vivo* digestibility tests using fistulated bulls showed a digestibility of 24 per cent for raw bagasse and 68 per cent for setaria grass (control).

1.30 As the feeding of Zebu and Creole bulls with high levels of molasses, fishmeal and urea had given encouraging results at Palmar Livestock Breeding Station; similar fattening trials were carried out on sugar estates keeping herd cattle. It was also found that administration of supplementary selenium did not have a significant effect on the performance of bulls fed high levels of molasses.

1.31 The distribution of molasses/bagasse feed manufactured for the Ministry at St. Antoine S.E. continued. When this cowfeed was not available, it was replaced by a modified cowfeed manufactured at the Livestock Feed Factory.

1.32 The total controlled catch of fish remained stable compared to the previous year at about 916 tons, despite the close season which, in fact, resulted in a more regular supply of fish to the market. The 1973 figures showed a serious decline in the landings of the most heavily exploited species, particularly *Siganus*, *Naso* and spiny lobsters and a marked increase in landings of two seine caught species, the grey and the red mullets. Exports of dried octopus from Rodrigues was 90 tons compared to 161 tons in 1972; the export of salted fish remained stable. Landings of tuna from foreign ships based in Port Louis dropped compared to previous years.

1.33 A programme of shark fishing by means of both drifting and anchored long lines was carried out in the waters of Mauritius and Rodrigues. A survey of skipjack schools around Mauritius was continued. The Trou d'Eau Douce Camaron hatchery was almost completely reconstructed in order to increase its production capacity and allow year-round production of post larvae. Plans were prepared for the multi-purpose hatchery at Albion. Sampling carried out systematically at all pond sites showed that growth of prawn appeared satisfactorily in all low altitude ponds. A study of the research to be conducted in the shelf and distant water fisheries was made by consultants provided by the British Overseas Development Authority.

1.34 The usual range of plant diseases was recorded on several crops. The following diseases were unusually severe during the year: root rot and defoliation of tea cuttings, veinal necrosis of tobacco, mosaic and powdery mildew of chilly and *Phomopsis* wilt of egg plant.

1.35 Research investigations were on strains of *Pseudomonas solanacearum* in Mauritius and on ginger blight. Pathogenicity experiments have established the existence of different pathotype groups based on wilt symptoms and pathogenic potential of the isolate. The identity of the organism causing ginger blight is still obscure. Although *Pyricularia* spp. have been repeatedly isolated from diseased leaves, pathogenicity could not be established conclusively.

1.36 Results of fungicide trials to control pea powdery mildew (*Erysiphe polygoni*) gave significant disease control and yield increase with Benlate (0.5 g/litre) and Thiovit (2g/litre). Four to six sprays at weekly intervals were essential for significant disease control. Newly introduced tobacco varieties were assessed for their resistance to black shank and root knot nematodes. Varieties S.C.66 and N.C.95 were highly tolerant. Varieties Kutsaga E1 and Kutsaga E2 compared favourably with Yellow Mammoth in tolerance to black shank but were highly susceptible to rootknot nematodes.

1.37 The Quarantine Service was responsible to implement legislation regarding phytosanitary control. Phytosanitary control was exercised at ports of entry during the arrival of 1807 planes and 117 ships. 560 plant import permits and 2760 phytosanitary certificates were issued during 1973. Plant items released from quarantine included citrus, rice, tea, strawberry, guava, chinese gooseberry, litchi, mango, grapevine and a few ornamentals.

1.38 The Chemistry Division continued to provide the analytical services to the other research divisions of the Ministry. These included soil samples from small planters' fields, water samples for the camaron hatchery and ponds, tobacco leaves for uptake of certain elements, maize and setaria in the study of silica uptake, ginger in connection with spacing and fertilizer trials, soil samples from various experimental sites and feeding stuff in connection with feed formulation.

1.39 New methods of analysis were studied relative to the determination of pesticide residues on crops. Organo-chlorine and organo-phosphorus pesticides were studied. Several crops were analysed for pesticide residues.

1.40 The Government Notice No. 15 of 1968, cited as the "Milk Trade Regulations, 1967" established the norms for some physical and chemical aspects of "Cows milk". The Dairy Chemistry Division checked the norms already established and promulgated fresh norms where necessary. These covered not only cow milk but also goat milk and all the other milk products in common use in Mauritius.

1.41 Research by the Entomology Division was mainly conducted on stable flies. The trials on the possibility of establishing sericulture in Mauritius were continued.

1.42 The ecology of *S. nigra* and *S. calcitrans* were studied at Savannah and F.U.E.L. Sugar Estates. Monthly population fluctuations and relative abundance and distribution of the two species were determined. Oviposition and development of the immature stages of *S. nigra* were found to take place in most green cut vegetation uncontaminated with animal urine.

1.43 Laboratory studies were aimed at finding the effects of blood meals on the fecundity and longevity of *S. nigra* and feeding stimulants likely to improve blood intake. Sterilization tests showed that when pupae were irradiated with 3 kr, male sterility was increased to over 98 per cent and female fecundity was completely inhibited.

1.44 Trials aimed at finding specific parasites of *S. nigra* in Uganda were continued. Twenty consignments of stable fly puparia were received but the level of parasitism was very low.

1.45 Mulberry plantations were established at Barkly, Pamplemousses, Mapou, Flacq, Curepipe, Rivière des Anguilles and Plaisance. Much attention had been devoted to the production of disease free silkworm seeds, starting from selected cocoons.

1.46 At Curepipe Experiment Station, a destoning of the fields was carried out. An additional shed was built for housing more ducks. A sericulture unit was set up in March and operated well. New orchards included cherry and peach. Foodcrops grown included rice, arouille and sweet potatoes. Vegetables were grown both for demonstration and seed production. About 900 tons of fodder was supplied to Cureppie Livestock Breeding Station. Experiments were mainly carried out on rice and vegetables.

1.47 At Reduit, the citrus orchard gave a fair crop. Production of vegetable seeds was carried out satisfactorily despite drought conditions. Foodcrops planted included groundnuts, sweet potatoes and arouille. (*Colocasia* sp.).

1.48 As in previous years, Barkly Experiment Station was the centre of vegetable seed production. The Station was also responsible for the propagation of fruit trees and ornamentals.

1.49 At Abercrombie Nursery, the grape plants were pruned. The inter-rows of mango orchard were used for the planting of vegetables for seed production.

1.50 282,000 people visited the Royal Botanic Gardens at Pamplemousses. About 700 plants of various species were planted. The labelling of plants continued with the help of the Mauritius Herbarium.

1.51 At Pamplémousses Experiment Station, tobacco was planted as in previous years. Vegetable seed production was also carried out.

1.52 Tobacco seed of all the commercial varieties was produced at Richelieu Experiment Station. Foodcrops grown included maize, groundnuts, sweet potatoes and cassava. Experiments were carried out on tobacco, cotton, soyabean, pomme d'amour, beans, maize, cauliflower and grapes. Orchards were well maintained. The grape ordered was extended for experiments on training methods.

1.53 At the end of the year, the Livestock Breeding Stations at Curepipe and Palmar carried a total of 344 heads of milch cattle, 318 heads of herd cattle, 262 pigs, 218 rabbits, 207 goats and 48 sheep. Surplus stock was as usual sold to farmers.

1.54 During the year, the Poultry Breeding Centre hatched 120,984 chicks, out of which 56,778 pullets, 57,296 day-old male chicks and 4,707 day-old broilers were sold to small poultry keepers.

1.55 Officers of the Extension Service paid over 16,500 visits to farmers and advised on a wide aspect of crop and animal husbandry with special emphasis on rational use of fertilizers, utilization of better varieties of cane, improved cultural practices crop production, foodcrop intensification and improved breed of livestock and better management.

1.56 About 80 demonstrations were carried out in planters' fields. Fertilization of major crops and control of pests and diseases were the main practices demonstrated. Conducted tours were arranged for groups of farmers. Group meetings with farmers were also organised. 181 such meetings were held in the evening and were attended by over 3,700 farmers.

1.57 The "Farming News" was published at the rate of 1,600 copies per month, offering an early and timely coverage of relevant farming practices. Bimonthly A.Y.C. magazines were published to cater for the needs of club members at the rate of 500 copies per issue and some 2,000 handouts to participants of agricultural training courses. Some 6,000 advisory leaflets on crops and livestock were also distributed to farmers. Besides, Booklets on pest and disease control, rabbit breeding, vegetable project record were prepared and distributed to A.Y.C. members. In the field of mass media, thirteen talks on various aspects of livestock husbandry were radio-broadcasted and thirteen talks were delivered on the Television.

1.58 The four permanent district headquarters remained the centres of agricultural extension activities in the rural areas. Various crops comprising new varieties of sugarcane, onion, garlic, ginger, new varieties of sweet potatoes and hybrid maize were planted to demonstrate comparative yields, better spacing, better cultural practices and to supply planting material to planters.

Silk worm rearing at District Demonstration Centres under the control of the Entomology Division was continued. A small live stock unit was kept in all centres. A few goats of improved breed were sold to breeders. About 100 goat services were effected with a view to upgrading the local stock. Sale of animal feeds were started on the centres and the response has so far proved satisfactory. The centres served as venues for training courses to agricultural youth clubs and to receive visits and entertain requests from farmers.

1.59 The number of Agricultural Youth Clubs rose to 74 which led to the creation of one new regional federation. For the diffusion of basic agricultural knowledge and practices, 364 meetings—which were attended by some 4,000 club members and 8 field tours to visit places of agricultural interest—were organised. A weekly course in elementary agriculture of ten weeks duration was held on Saturdays at Reduit, Rivière des Anguilles, Flacq and Mapou. Two Kitchen Garden Competitions, a field day and an exhibition were held. Prizes and certificates were awarded to winners.

1.60 The upward trend in agricultural diversification was maintained. The effective acreage under foodcrops was estimated at 8,858 acres and out of these 1,617 acres of pure stand equivalent were intercultivated in sugarcane. The main crops grown in sugarcane interlines were potato and groundnut.

1.61 With the replacement of gummosis susceptible varieties by resistant ones, the threat of gumming disease in sugarcane is diminishing. High incidence of potato blight occurred mostly in the upland regions. Onion and garlic were affected by pink root and purple blotch diseases. The incidence of rust on hybrid maize was high.

1.62 Tuber moths and leafier caterpillars were the major pests of potato and groundnut respectively. Cob borers caused severe damage to the hybrid maize crop. The Natal fruit fly remained a major pest for fruit trees and creepers. However, the incidence of the Rhinoceros beetle and that of the Banana Leaf Roller was low.

1.63 Close liaison was maintained with the Mauritius Sugar Industry Research Institute and other research organizations in relation to field problems and latest findings. Officers of the Extension Service regularly attended the talks given by the research workers of the M.S.I.R.I.

1.64 A training course in animal production lasting 19 weeks was organized for the Field Assistants and the Livestock Assistants.

1.65 A number of visits were paid to schools and poor institutions. Advice was given as well as assistance on the way of seeds, fertilizers and pesticides.

1.66 Some 56 soil samples were taken from planters' fields for analysis by the Chemistry Division and recommendations were made accordingly. Other activities comprised weekly recordings of market prices, estimate of foodcrop production, assessment of herbicide damage to foodcrops, investigation into fodder problems and suitability of Crown Lands for agricultural development.

1.67 The Division of Veterinary Services continued to provide artificial insemination service on Sundays and Public Holidays in addition to the normal weekday service. Both fresh creole and Friesian semen from bulls at the Artificial Insemination Centre and frozen Charolais and Friesian semen imported from Kenya were used. Frozen Friesian semen was used in Moka and part of Flacq district and frozen Charolais semen was used on Ongole cows at Palmar Livestock Breeding Station. 10,118 cows were inseminated compared to 10,110 in 1972 and the conception rate was 56 per cent compared to 57 per cent in 1972.

1.68 Apart from Trichomoniasis which was diagnosed in one cage bird at Black River, no new disease was recorded. The field staff of the Division attended to 644 cases of mineral deficiencies, 529 cases of udder trouble, 589 cases of difficult calvings and 871 cases of digestive disorders.

1.69 To prevent the introduction of infectious/contagious diseases into the island, Animal Quarantine facilities were maintained at Roche Bois, Reduit and Rose Hill. During the year, 2,312 bullocks, 1,721 sheep, 2,684 goats, 50 pigs, 710 cage birds, 18 dogs and 5 cats were received at the Quarantine Stations. Similarly, 42,832 day-old chicks imported from various countries were quarantined at various importer's premises. The importation of frozen beef and beef products showed an increase of 7.6 per cent whilst frozen mutton and offals, frozen goat meat and offals and frozen poultry showed a decrease of 41.3 per cent, 50.3 per cent and 34.8 per cent respectively, over 1972.

1.70 The Animal Health Laboratory received a total of 3,448 specimens during the year, out of which 3,109 were subjected to pathological, bacteriological, parasitological and haematological examinations. The work of the laboratory was concerned with the investigations of the specimens submitted as well as with the preparation of vaccines, animal disease surveys and research. Vaccine production was restricted to Newcastle disease vaccine, Fowlpox vaccine and Booster Newcastle disease vaccines of which 186,553, 230,625 and 127,837 doses respectively, were produced. No vaccine was imported from Madagascar during the year.

1.71 Pipe laying in the Pilot Project area and pump installation at the reservoir site was completed and the road system was re-designed. The Northern Plain Irrigation Pilot Project Water Users' Cooperative Society was set up. The NPIPP was inaugurated in October 1973 by Dr. the Rt. Honourable Sir Seewoosagur Ramgoolam, Kt. M.L.A., Prime Minister.

1.72 The Hunting Technical Services Group of Consultants completed the second stage of the feasibility study for the Northern Plain Irrigation Project. They recommended the implementation of the Immediate Works Programme (IWP). Sir MacDonald & Partners were requested to submit proposals for the preparation of designs and contract documents for IWP. Repairs to the La Nicolière Feeder Canal was undertaken by the Central Water Authority.

1.73 Under the Small Wells Scheme, twenty four boreholes were drilled, out of which three were unsuccessful. Pumps and equipment for eighteen boreholes were ordered. Four boreholes started operation during the year.

1.74 The Engineering Division was responsible for the servicing, repair and maintenance of all the Ministry vehicles, tractors and machinery. Advice on the choice of machinery and equipment was provided to other divisions. The design and construction of various buildings for the Agricultural Services were also undertaken.

1.75 The Livestock Feed Factory sold 4,240 tons of livestock feed manufactured from raw materials; practically all imported except for molasses and a certain quantity of locally produced maize. Thirteen different kinds of feed were offered for sale.

1.76 The Fisheries Protection Service is responsible for the protection of the fish stock in our lagoons and the enforcement of the laws and regulations relating thereto. For the purpose, the island was divided into four administrative zones with thirteen control posts all round the island, each controlling ten to fifteen miles of coastline and a lagoon area of about seven square miles. A drop in the total landings at controlled landing stations was registered compared to last year.

1.77 The two Senior Technical Officers of the Agricultural Services in Rodrigues are responsible for all agricultural development. During the year, 270 arpents of land were terraced. An additional four miles of access roads were built and twenty six miles of existing access road were repaired. One rockfill dam was completed and the work on the construction of four other dams progressed satisfactorily. 14,000 feet of new pipelines were laid. The existing breeding centres were improved. 191 arpents of land were reafforested. A new deep-sea fishing boat was launched.

1.78 The value of exports from Rodrigues was Rs 4,62 million compared to Rs 3,26 million in 1972. The number of cattle exported showed a 30 per cent increase over 1972. The number of pigs exported was practically the same while the number of sheep and goats exported registered a 25 per cent increase compared to the previous year. The export of onion and garlic remained more or less stable.

II. Boards and Committees

2.1 The Permanent Secretary or his representative served on the following Boards and Committees:—

Agricultural Marketing Board

Board of Agriculture, Fisheries and Natural Resources

Board of Examiners for the Registration of Agricultural Chemists

Cane Planters and Millers Arbitration and Control Board

Cane Release Committee

Central Water Board

Council of the University of Mauritius

Cyclone and Drought Insurance Board

Fisheries Committee

Foodcrops Insurance Committee

Irrigation Committee

Land Settlement Committee

Mauritius College of the Air

Mauritius Sugar Industry Research Institute Executive Board

Mauritius Sugar Industry Research Institute Advisory Committee

Northern Plain Irrigation Pilot Project Executive Committee

Northern Plain Irrigation Project—Immediate Work Programme Committee

Nouvelle France Tea Estate Board

Pesticides Control Board

Senate of the University of Mauritius

Small Scale Irrigation Project Committee

Sugar Industry Rehabilitation Fund Committee

Sugar Millers Rehabilitation Fund Committee

Sugar Planters Rehabilitation Fund Committee

Tea Control Board

Tea Development Authority

Tobacco Board.

III. Board of Agriculture, Fisheries and Natural Resources

3.1 The Board functions under Ordinance No. 29 of 1957. The following advisory committees were set up for specific purposes:

- (a) The Land Settlement Committee.
- (b) The Cane Release Committee
- (c) The Irrigation Committee
- (d) The Fisheries Committee

3.2 The Board met only once to make recommendations regarding the composition of various sub-committees.

3.3 The Land Settlement Committee met on one occasion. Its main business was the selection of suitable tenants for transfer of holdings and advice on administrative problems relating thereto.

3.4 The Cane Release Committee met on two occasions to consider the establishment of M4 and M5 nurseries at eight proposed sites.

3.5 The Irrigation Committee met regularly each month. It was concerned with the allocation of water for irrigation purposes from the Magenta canal, La Ferme Reservoir and La Nicolière reservoir, the repairs to the Magenta, La Ferme and Trianon canals and the allocation of irrigation water to water users depending on the storage situation in the reservoirs.

3.6 The Fisheries Committee met on four occasions to discuss amendments to the Fisheries Ordinance.

IV. Comité de Collaboration Agricole — Maurice—Réunion—Madagascar

4.1 The meeting of the Comité was held in Reunion from 15th to 20th October, in conjunction with the first Congress of the Association Reunionnaise pour le Développement de la Technologie Agricole et Sucrière (ARTAS). The proceedings of this Congress is fully reported upon in *Revue Agricole et Sucrière de l'Ile Maurice* Vol. 52 No. 4 (September—December 1973).

V. Cane Planters' and Millers' Arbitration and Control Board

5.1 The Arbitration and Control Board operated under the Sale of Canes (Control) Ordinance No. 18 of 1964. The executive machinery of the Board was run as a division of the Ministry of Agriculture and Natural Resources.

MEETING OF THE BOARD

5.2 The Board held 25 meetings during the year as follows:

- 3 meetings in connection with the assessment of sugar to planters
- 9 meetings in connection with protests against assessment of sugar
- 6 meetings in connection with protests against Road Rates
- 1 meeting in connection with protest against Cost of Loading
- 6 meetings in connection with charges of delimitation of Factory Area—Reopening of Mon Désert Weighbridge—Installation of Core Samplers on sugar estates—Applications for Separate Sucrose Content Tests—Purchase of car for the Chairman.

CANE TESTNIG

5.3 The canes supplied by 238 planters or group of planters and by 137 Estate Sections belonging to Miller-Planters were tested separately. The total number of tests carried out was 37,759.

ASSESSMENT OF SUGAR

5.4 Following the publication of the final assessment of sugar to planters for the 1972 crop, 6 Cooperative Credit Societies and eleven group of planters lodged protests against the awards made by the Board. Following the hearing of the protests, the Board maintained its previous assessment in all cases except one.

TRANSPORT COSTS

5.5 Following a protest made against the method of computing the Road Rates, the Board decided to review the present method with the assistance of the accountants representing all the associations concerned with the Sugar Industry.

DELIMITATION OF FACTORY AREAS

5.6 The delimitations of factory areas were not altered during the year under review. Three applications for changes were received by the Board and two of them were postponed to the following year. One was rejected.

PERMITS TO MIDDLEMEN

5.7 Permits were issued to 33 middlemen for the crop.

COMPLAINTS AGAINST MIDDLEMEN

5.8 There were 8 complaints made by planters against middlemen. In all cases the Board has been able to settle the disputes between the parties.

CANE CONTRACTS

5.9 There were 11,150 cane contracts registered by the Board. The total number of contracts in force for the crop was 31,200 covering some 31,200 planters.

BREACH OF THE SALE OF CANE (CONTROL) ORDINANCE

5.10 One case of Breach of the Sale of Cane (Control) Ordinance was reported to the Police. The number of planters who failed to enter into contact before the 31st May totalled 322. In 1972 the number was 264.

CANE VARIETIES

5.11 During 1973 the varieties approved for planting were the following:

M 134/32 (red, white and striped) ...	M 351/57
M 112/34	M 124/59
M 423/41	M 438/59
M 31/45	Eben 1/37
M 202/46	Eben 50/47
M 93/48	B.H. 10/12
M 99/48	B 37161
M 253/48	B 37172
M 409/51	N. Co. 376
M 13/53	S. 17
M 13/56	

CONTROL OF WEIGHBRIDGES

5.12 The number of weighbridges in operation was 84. All the weighbridges were tested for accuracy prior to the beginning of the crop. 7 were found incorrect on 1st examination, 2 on 2nd examination and one on 3rd and 4th examinations. All were re-tested until accuracy was obtained. All weighbridges were again tested for accuracy on three occasions during the crop.

5.13 During the crop, 4,299 surprised checks were carried out and 4,093 vehicles were re-weighed (3,114 lorries and 979 carts). In one case the weighing was found to be incorrect and the weigher was prosecuted.

VI. The Sugar Industry

CROP RESULTS

6.1 The climatic conditions during the 1973 crop season were considered good in the growing period and favourable to cane ripening in the maturation period and led to record crop.

6.2 Hereunder are some of the crop results compared with those of 1972:

	1973	1972
Area cultivated, (arpents) ...	207,029	205,240
Area reaped (arpents) ...	191,822	190,150
Cane produced, metric tons ...	6,242,631	6,314,667
Sugar produced, metric tons ...	718,464	686,366
Tons of cane per arpent (metric) ...	32.5	33.2
Tons of sugar per arpent (metric) ...	3.75	3.61
Yield of sugar per cent cane ...	11.51	10.87
Crushing rate, hourly metric tons ...	113.7	112.4
Crushing rate, daily metric tons ...	2,310	2,280

CANE VARIETIES

6.3 In order of importance, the main varieties making up the 1973 crop were the following: S.17, M13/56, M93/48, M377/56, M442/51, M202/46, M31/45 and M351/57. These varieties accounted for 89 per cent of the crop; the remaining 11 per cent were made up of M124/59, M438/59, M147/44, M13/53 and other varieties.

QUOTAS AND PRICES

6.4 There were no changes from the previous year, and the negotiated price quota for the calendar year 1972, under the Commonwealth Sugar Agreement, remained at 380,000 long tons at the price of £57.

EXPORTS

6.5 The exports of sugar were as follows:

		<i>long tons</i>	
		1973	1972
United Kingdom	...	380,000	387,951
U.S.A.	...	38,600	27,500
Canada	...	189,669	128,389
USSR	...	38,600	24,790
Iran	...	12,364	12,402
Yemen	...	4,781	—
Bangla Desh	...	—	10,062
Malaysia	...	12,600	13,125
Indonesia	...	12,402	—
South Vietnam	...	12,599	—
Iraq	...	11,368	—
Seychelles	...	20	—

Apart from the sugar exported, there were 35,776 long tons consumed locally.

MOLASSES AND ALCOHOL

6.6 The production of molasses for the crop amounted to 184,842 metric tons. During the calendar year 185,154 metric tons were exported. About 8,400 tons of molasses were used for the manufacture of rum and various alcoholic products. Alcohol produced amounted to about 1,767,457 litres of pure alcohol, the greater part of which was rum and denaturated spirit. A small part was used for the manufacture of vinegar and perfumes. A limited quantity, amounting to 183,432 litres were exported.

VII. The Tea Industry

TEA CONTROL BOARD

7.1 The Tea Control Board was established under the Tea Industry Control Ordinance (No. 29 of 1959, as subsequently amended) and, by proclamation, came into force in 1960. The Board met fourteen times during the year. The Minimum Interim Price for the period 1st January, 1973 to 31st December, 1973 was reviewed on several occasions and was fixed as follows:

January to February 1973	...	29.0 cents/ $\frac{1}{2}$ kg
March to June 1973	...	28.5 cents/ $\frac{1}{2}$ kg
July to September 1973	...	27.5 cents/ $\frac{1}{2}$ kg
October to December 1973	...	28.0 cents/ $\frac{1}{2}$ kg

The final price fixed ranged from 29 to 32 cents. Amendments were brought to the existing legislation in December 1973.

STATISTICS

7.2 In conformity with the decision taken by the Statistical Committee of the F.A.O. *Ad Hoc* Consultation Committee on tea, it was decided that the Statistical Report of the Tea Control Board would henceforth be presented on a calendar year basis. The Board continued to issue quarterly and annual Statistical review.

CLIMATE

7.3 Climatic conditions were not so favourable for the production of tea during the period and production was affected by the dry period which prevailed in the last quarter of the year 1973; the effect was much more pronounced on young plants which were coming into bearing.

TEA FACTORIES

7.4 Eight tea factories operated during the year and they all showed a decrease in production when compared to 1972. The decrease was more pronounced at Nouvelle France Tea Factory where the decrease recorded was 41 per cent over the corresponding figure for 1972.

PRODUCTION OF TEA BY FACTORIES

7.5 Mauritius produced 4,078,943 kilos of black tea in 1973. The output of factories over the past five years was as follows:

Factory	1969 kgs	1970 kgs	1971 kgs	1972 kgs	1973 kgs
Bois Cheri ...	797,026	827,523	818,064	911,694	750,291
La Flora ...	511,242	480,837	580,532	498,661	438,781
Chartreuse ...	744,719	543,170	802,614	946,321	941,110
Corson ...	265,927	300,943	313,825	323,026	269,009
P. Colville ...	152,446	133,850	203,343	217,399	183,681
N. France ...	269,314	328,380	339,115	321,661	189,726
M. Anguilles...	85,432	97,374	133,949	121,184	89,278
Dubreuil ...	371,283	546,006	897,811	1,338,249	1,217,067
TOTAL ...	3,197,389	3,258,083	4,089,253	4,678,195	4,078,943

MAURITIAN TEA

7.6 Production amounted to 4,078,943 kilos in 1973 compared with 4,678,195 in 1972; a decrease of 12.8 per cent was registered. The quantity released for export was 3,525,025 kilos and local sales amounted to 650,431 kilos the corresponding figures for 1972 were 3,983,536 kilos and 612,847 kilos respectively. Tea continued to be sold on the South African Market and on the London Market where prices were slightly higher than in 1972.

7.7 Tea actually shipped from Mauritius during the year 1973 amounted to 3,699,701 kilos valued at 18,983,458 rupees (f.o.b.). The table below gives destination of export for the last five years:

<i>Destinations</i>	1969	1970	1971	1972	1973
	<i>kgs</i>	<i>kgs</i>	<i>kgs</i>	<i>kgs</i>	<i>kgs</i>
United Kingdom ...	1,173,223	906,573	552,433	869,556	726,497
South Africa ...	1,316,026	1,630,942	2,427,495	2,858,429	2,521,971
Ireland ...	33,397	68,769	97,563	80,464	29,608
Madagascar Republic (inc. Juan de Nova)...	13,966	16,020	15,326	16,254	13,924
Reunion ...	1,895	4,304	4,965	20,685	8,910
Kenya ...	—	—	—	—	—
New Zealand ...	—	—	—	13,070	35,260
British Indian Ocean Territories ...	—	—	—	—	—
West Germany ...	—	—	—	9,940	—
Comores ...	726	817	2,291	10,381	911
Malaysia ...	—	—	—	—	—
France ...	145	—	145	—	180
United States of America ...	17,647	—	—	—	60,770
Seychelles ...	15,529	19,832	17,988	9,238	22,503
Canada ...	926	—	—	—	4,150
Singapore ...	—	—	—	—	—
Australia ...	—	—	—	—	—
Netherlands ...	—	—	—	—	275,017
TOTAL ...	2,573,480	2,647,257	3,118,196	3,931,097	3,699,701

VIII. The Tobacco Industry

8.01 The acreage and quota allocated for required production, to registered producers were as follows:

	<i>Arpents</i>	<i>Kilos</i>
Virginia Flue-cured ...	803	460,000
Amarello Air-cured ...	305	300,000
TOTAL ...	1,108	760,000

8.02 Six arpents of a new Virginia Flue-cured variety was also allocated for cultivation outside quota on an experimental basis.

8.03 The acreage planted and production obtained compared to the previous year were as follows:

	1972		1973	
	Acreage Planted	Yield (Kilos)	Acreage planted	Yield (Kilos)
Virginia Flue-cured ...	763	293,819	779	393,460
New variety S.C. 66 (Trial) ...	—	—	6	4,011
Amarello Air-cured ...	269	224,606	282	261,389
TOTAL ...	1,032	523,425	1,067	658,860

CROP CONDITIONS

8.04 Weather conditions during the first crop of the year were marked by excessive rainfall at critical periods in some producing areas. Heavy rains at reaping stage caused curing problems for Virginia tobacco. On the other hand, Amarello tobacco had good growth but the leaves were thin.

8.05 Weather conditions during the second crop of the year for the Virginia Flue-cured tobacco were very dry. Producers with facilities for irrigation could produce a good crop in spite of the dry conditions. Amarello tobacco suffered stressed conditions and produced low yield.

INSECT PESTS

8.06 Leaf eating caterpillars were the main pests. Some attacks by cut-worms were reported in the second crop of the Virginia Flue-cured tobacco.

8.07 Bacterial wilt and mosaic diseases were observed in Amarello plantations. Some virus diseases were found in Virginia tobacco plantations.

YIELDS AND RETURNS

	Average Yield per Arpent	
	1972 kilos	1973 kilos
Virginia Flue-cured ...	420	441
Amarello Air-cured ...	1,063	927

	Average Return per Arpent	
	1972 Rs	1973 Rs
Virginia Flue-cured ...	3,197	4,155
Amarello Air-cured ...	3,190	3,808

	Average Value per Kilo	
	1972 Rs	1973 Rs
Virginia Flue-cured ...	7.62	9.42
Amarello Air-cured ...	3.00	4.11

8.08 There was a further increase of 18 per cent in the prices of Virginia Flue-cured and Amarello Air-cured tobacco for all the grades for crop 1973-74.

8.09 The quality of the two types of tobacco was superior to that of last year.

Percentage of Bright and Medium Grades					
	1969	1970	1971	1972	1973
Flue-cured	91	92	91	84	87
Air-cured	31	39	42	11	30

1973

LOCAL MANUFACTURE

8.10 The Manufacturers purchases and usings of domestic and imported leaf were as follows:

(a) 1973-Purchases	Domestic	Imported	Total	% Total Imported	C.I.F. Value per kg.	
					Imported	Domestic
	Kgs	Kgs	Kgs		Rs	Rs
B.A.T. Co. Mts. LTD...	400,116	50,771			19.31	{ 9.39
A.T.C. Mts. LTD. ...	165,136					{ 4.91
TOTAL ...	565,252	50,771	616,023	8.2	19.31	8.08

(b) 1973-Usings	Domestic	Imported	Total	% Total Imported	C.I.F. Value per kg.	
					Imported	Domestic
	Kgs	Kgs	Kgs		Rs	Rs
B.A.T. Co. Mts. LTD...	479,797	44,800	524,597	8.5	—	—
	197,447	43	197,490	—	—	—
TOTAL ..	677,244	44,843	722,087	6.2	—	—

The Consolidated Tobacco Corporation Ltd. ceased operation.

(c) 1972	Domestic	Imported	Total	% Total Imported	C.I.F. Value per kg.	
					Imported	Domestic
	(Kgs)	(Kgs)	(Kgs)		(Rs)	(Rs)
Purchases ...	602,865	43,500	646,365	6.7	18.43	7.24
Usings ...	614,189	32,494	646,683	5.0	—	—

8.11 The percentage of imported leaf used in manufacture increased by 1.2 per cent in 1973, compared with 1972, as illustrated in the following table:

		Year				
		1969	1970	1971	1972	1973
Per cent Imported	...	7.6	7.6	8.0	5.0	6.2

8.12 The average C.I.F. value of Imported Virginia leaf was Rs 19.31 per kilo compared with Rs 10.24 per kilo for domestic Virginia leaf. The average value of Amarello Air-cured was Rs 4.92 per kilo.

8.13 Imports of leaf and cigarettes for the last two years are tabulated below:

		1972		1973	
		Kgs.	Value Rupees	Kgs.	Value Rupees
Cigarettes*	..	14,074	409,004	12,658	391,599
Leaf :					
U.S.A. ...	...	43,500	801,612	46,173	936,495
Other sources	...	—	—	4,598	43,693
Total leaf	...	43,500	801,612	50,771	980,188
GRAND TOTAL	...	57,574	1,210,616	63,429	1,371,787

*Imported cigarettes are mainly for use by H.M.S. Mauritius and as ships' stores.

8.14 Using of domestic and imported leaf have increased by Kgs. 63,055 and Kgs. 12,349 respectively, compared with 1972; a net increase of Kgs. 75,404.

IX. Agricultural Division

HEAD OF DIVISION: A. L. OWADALLY, DIVISIONAL SCIENTIFIC OFFICER

9.01 Research work of the Agricultural Division continued on all crops under study in the previous year with the exception of cotton and castor bean. It was found that yields obtained from those two crops were not high enough to be of interest in this country.

RICE

9.02 Research work proceeded at F.U.E.L. with rice under flooded conditions. Variety trials were conducted with varieties IR 532-9319, IR 532-9334, IR 665-6291, IR 665-6292, 63.83 and IR 532-208 (control). It was found that variety 63.83 produced significantly lower paddy yield than the others.

9.03 Fertilizer trials were conducted to determine the optimum dose of nitrogen for the rice variety IR 532-208. The treatments were 0, 50, 100, 150 and 200 kg. N/ha. In one experiment, the levels of P_2O_5 and K_2O were at 250 Kg/ha. and 50 kg/ha respectively and in another experiment the levels of P_2O_5 and K_2O were reversed. In a third experiment the levels of P_2O_5 and K_2O were at 250 kg/ha. In the first experiment, in the first season i.e. January to May, there was no significant difference between the treatments in the number of tillers per bill and the number of panicles per bill. The plant height was significantly taller than the control at 150 and 200 kg N/ha. The paddy yield per hectare was significantly higher than the control at 150 kg N/ha. However, the trend in all three experiments, at both January to May and August to December seasons, would indicate that an increase in nitrogen at any level of P_2O_5 and K_2O under investigations did not produce a resulting significant difference in paddy yield. Increase in nitrogen application resulted in some instances to an increase in plant height, and no significant responses were observed in the other growth parametres.

9.04 Monthly sowings of varieties found in the variety trial were performed to study their growth habits.

TOBACCO

9.05 Variety trials were conducted at Richelieu Experiment Station with five flue-cured Virginia tobacco varieties namely Yellow Mammoth, Kutsaga E1, Kutsaga E2, S.C. 66 and N.C. 95. In the first season there was no significant difference in yield of cured leaf between the varieties. In terms of leaf quality, varieties Kutsaga E1 and Kutsaga E2, S.C. 66 and N.C. 95 produced significantly higher leaf quality than the control variety, Yellow Mammoth. The same trends were observed in the second season. It was also evident that varieties S.C. 66 and N.C. 95 were less susceptible to nematode infection than Yellow Mammoth or Kutsaga E1 or Kutsaga E2. The last two varieties were also found to be more susceptible to black shank disease than the other varieties.

9.06 Fertilizer trials were also carried out to determine the effects of N, P and K on the yield and quality of variety S.C. 66. Results indicate that NP and NK interaction were significant. High levels of K may lower yield and leaf quality.

SOYABEAN

9.07 An experiment was undertaken at Pamplémousses Experiment Station to find out the response of soyabeans seeds treated with inoculum. The investigation was performed at four levels of nitrogen varying between 0 and 80 kg. N/ha. with seeds treated and untreated with inoculum. It was found that there was no significant response to nitrogen levels or to the interaction effects between nitrogen and inoculum treatments. However, there was a significant difference in yield between plots grown with inoculated and non-inoculated seeds.

GARLIC

9.08 Feng Chan Selection No. 1 and 2 cultivars were introduced from Taiwan and planted in observational plots in Redit Experiment Station.

GINGER

9.09 A spacing trial was in progress at Plaisance Experiment Station to determine the optimum planting distance for this crop. The experiment was of a randomized block design with four treatments and five replicates. The plot size was 4.5×4.5 metres with 61 cm. between the blocks and plots. The treatments applied were 23×23 cm, 30×30 cm, 37.5×37.5 cm, 45×45 cm. Results indicated that the treatments of 30×30 cm and 37.5×37.5 cm produced the highest yields of rhizomes.

PEAS

9.10 Four varieties of peas namely Ajax, Greenfeast, Chinese Pea and Pigeon Pea were grown at Plaisance Experiment Station in a randomized block design, with five replicates. It was found that the Chinese Pea would be more suitable for the production of green tender pods as its pea yield was low. The varieties Ajax and Greenfeast produced seed yields of 1530 and 1792 kg/ha respectively. The former variety seemed to have the quality of the dried peas and the Greenfeast variety appeared suitable for the production of green peas. Both varieties were found susceptible to *Fusarium* wilt. The variety of Pigeon Pea, with its trailing habit needed to be stacked and was found to be the best yielder with a seed yield of 2,111 kg/ha. It was found suitable for the production of tender pods and peas.

ONION

9.11 The monthly sowing equipment of five onion varieties namely Local Red, Red Creole, Tropicana Hybrid, White Creole and Gizeh continued at both Plaisance Experiment Station and Palmar Experiment Station. About the 10th of every month, 40 grams of seeds of each variety were sown. The seedlings were transplanted to raised beds of 9 square yards,

35 to 45 days from sowing and grown at a spacing of 15×10 cm. The plots received fertilizers at the rate of 8 tons of farmyard manure, 76 kg of ammonium sulphate, 24 kg of nitrate of soda per arpent and 100 kg of muriate of potash per arpent. The plants were protected against attacks of thrips by regular fortnightly applications of 0.1 per cent solutions of 'Orthodibron' and 'Azodrin'.

9.12 It was observed that a high percentage of bolting occurred in the variety Local Red, particularly in the winter months. Variety Red Creole bolted slightly at both stations but varieties White Creole, Gizeh and Tropicana Hybrid did not bolt at all.

9.13 Pink root disease was prevalent on all varieties on both stations. Purple blight and blast diseases were more preponderant at Plaisance Experiment Station during the wet and cool days.

9.14 Results indicate that there was a drop in yield of bulb from April to September sowing, for all varieties, at both stations. Variety Local Red gave its best yield when sown in March. The other varieties did best when sown in October or November. Varieties Tropicana Hybride and Gizeh had two suitable sowing months for optimum yield, which were February to March and October to November.

9.15 Results confirmed that the light sandy loam of Palmar Experiment Station was more suited to onion growing than the low humic latosol of Plaisance Experiment Station. The yield obtained at Palmar Experiment Station was three or four times the yield at Plaisance Experiment Station.

SELECTION OF VEGETABLE VARIETIES

9.16 Seeds of a number of varieties of cabbage, cauliflower, tablebeet, carrot and broad beans were imported from France and sown in observational trials for selection of adaptable varieties under local conditions.

CABBAGE

9.17 Seeds of varieties Copenhagen Market, Charleston Wakefield and Large Head were sown at Barkly Experiment Station and Reduit Experiment Station. Their growth characteristics were recorded. It was found that varieties Copenhagen Market and Charleston Wakefield could be suitable in our agroclimatic conditions but variety Large Head should be eliminated as it was a poor yielder and susceptible to diseases and pests.

CAULIFLOWER

9.18 Seeds of varieties Super Snowball, Early Snowball, Algiers Large Early, Danish Late and Le Cerf were sown in June at Barkly Experiment Station and Reduit Experiment Station for observation and selection. One month after sowing, the seedlings were transplanted at a spacing of 90×60 cm in plots measuring 9×6 m. Before transplanting, all the plots received fertilizers at the rate of 200 kg. ammonium sulphate, 100 kg triple superphosphate

and 50 kg muriate of potash per arpent. The crop was sprayed weekly with 0.2 per cent solution of Dithane M45 and 0.1 per cent solution of Orthodibrom for the control of diseases and insect pests. The growth habit of each variety, its type and size of curd and growth cycle were recorded. It was found that varieties Early Snowball, and Super Snowball were high yielding with large attractive and compact curds but they were very susceptible to Fusarium Wilt and to bacterial soft rot. Varieties Danish Late and Algiers Large Early were very slow to initiate curd formation and the curd was consequently very small. The variety Le Cerf, on the other hand, was high yielding, uniform in development but the head was not attractive in shape and colour. All the varieties were therefore eliminated.

TABLEBEET

9.19 Varieties Detroit Globe Improved and Egyptian Dark Red Flat grown at Barkly Experiment Station and Reduit Experiment Station showed that both varieties were promising but further work should be undertaken to determine their blotting capacity.

CARROT

9.20 Varieties Algerian Sweet, Colmar, Touchon and De La Halle grown at both stations showed that Algerian Sweet was the earliest and produced the highest yield of roots. Although, Touchon and De La Halle were 15 to 20 days late in growth and were lower in yield, they had superior root quality than Colmar or Algerian Sweet. On the basis of root quality, it was decided that further study should be undertaken on the variety of De La Halle, before any recommendations can be made.

BROAD BEANS

9.21 Two varieties named Aquedulce Long Podded Extra Early Muchamiel were sown at Barkly Experiment Station on 12th July 1973 at a spacing of 60×60 cm. Before sowing, the plots received single superphosphate and muriate of potash at the rate of 200 kg. and 50 kg. per arpent respectively. One month after germination, a side dressing of ammonium sulphate at the rate of 100 kg. per arpent was applied. The plots were sprayed at weekly intervals with Dithane M45 and 0.1 per cent solutions of Orthodibrom. The pods were harvested at maturity after a crop cycle of 90 days. It was found that the yields of beans for Aquedulce Long Podded and Extra Early Muchamiel were 0.7 and 2.4 metric tons per ha. Both varieties were considered to yield poorly and were too susceptible to bacterial wilt and should therefore be discarded.

TEA

9.22 Long term experiments on the cultural practices were in progress at Wooton Experiment Station. Experiments to determine the optimum time of prune, pruning height and tipping height were being conducted at Wooton Experiment Station. At the same experimental station, experiments on the split nitrogen applications, optimum N level in relation to leaf yield and the response to NPK applications in the year of prune followed by N in the subsequent year were under investigations. A number of clones are being observed for yield, ease of rooting and quantity of made tea.

CITRUS

9.23 Stock-scion compatibility experiments were in progress at Barkly and Richelieu Experiment Stations. At Barkly Experiment Station scions of orange varieties Hamelin, Washington Navel, Valencia Late and Pera were grafted on the following seven rootstocks: Citrange Troyer, Citrange Rusk, Citrange Morton, Sunki tangerine, Ranpur lime, Cleopatra Mandarin and Trifoliata Orange. At Richelieu Experiment Station, the scions of four mandarin varieties namely Fagan, Empress, Djercok Keprock and Djercok Garoet were grafted on the above-named seven rootstocks. At both stations, the suitability of the stock-scion combination, growth performances, disease susceptibility were being observed.

X. Animal Production Division

HEAD OF DIVISION: J. A. C. DELAITRE, DIVISIONAL SCIENTIFIC OFFICER

10.1 By the beginning of 1973 the reorganisation of the Agricultural Services as planned in 1972 (Bruce Report) was being implemented.

10.2 In this reorganisation, the Animal Production Division is made responsible for research on Animal Production. The management of the Live-stock Breeding Stations and Extensions on Livestock Production are the responsibilities of other divisions.

10.03 At the beginning of 1973 the following posts were filled namely the posts of Senior Animal Husbandry Officer, clerical officer and typist, two posts of A.A.O. Further the S.A.H.O. was being assisted by two F.A.O. technicians—Messrs. R. Sansoucy and S. Nielsen. Dr. Preston, Animal Production Consultant of the F.A.O., was the adviser to the Ministry on Animal Production matters. In July 1973 Mr. Li Kwan Pun joined the Division as A.A.O.; a few days later Mr. Juggernaut was posted to the Division as Field Assistant. Mr. K. Mapoon joined the Division in July and was appointed A.H.O. in September he was in charge of the Division as from August 1973 to December 1973 whilst the S.A.H.O. was on Overseas Vacation leave. Mr. Naidoo joined the Division in September 1973 as A.H.O.

10.4 The S.A.H.O. continued to be in charge of the formulation of rations for the Livestock Feed Factory and when on leave the formulation was entrusted to the Agricultural Chemist. He also provided advice to the Extension Services whenever requested. The S.A.H.O. continued to be a member of the Committee of the Chamber of Agriculture concerned with the development of a Bagasse/Molasses Feed. In view of the limited staff it was decided to limit Research work to Milk and Meat production from cattle.

ANIMAL PRODUCTION

10.5 At La Brasserie small holdings dairy settlement pilot scheme, 5 hectares of La Brasserie were handcleared and planted with *SETARIA sphacelata* and *PENNISSETUM purpureum*. Five different types of cowsheds were erected each to hold six dairy cows. The conversion of scrub land to pasture required 500 men days/hectare. Once the grass had established it received fertilizers at 250/kg/hectare of Sulphate of Ammonia and 200 kgs/ha of 20:10:10. During the first year after establishment Setaria yielded 94 tons/hectare and elephant grass 74 tons/hectare.

10.06 The cows consumed an average of 56 kgs per cow/day of fresh material equivalent to an average of 8.7 kgs DM/Cow/day. The number of cows varied between 10 and 26 with a total of 7,136 Feeding Days and 6,269 Milking Days and an overall daily yield of 7.16 kgs milk/Feeding day or 2,782 kgs milk/cow/year. The milk had an average fat content of 3.62 per cent and a protein percentage of 3.31. Calves born in the Pilot scheme weighed an average of 29.7 kgs at birth and when weaned at about 3 months they weighed an average of 67.8 kgs that is an average daily gain of 414 gms.

EXPERIMENTAL RESULTS

10.07 Object: *To Determine Milk Production Response to the Feeding of Molasses/Bagasse Mixture given with two Levels of Roughage.* The formula of the Bagasse/Molasses Mixture being:

	Per cent
Molasses	74
Dehydrated bagasses pith	14
Groundnut Cake	8
Urea	2
Dilcalcium Phosphate	1.5
Sodium Chloride	0.5
	100.0

10.08 Treatments: In half of the milking herd, Group A—each cow received 50 kgs roughage per day and molasses/bagasse feed at the rate of 0.6 kg per kg of milk produced. For the other half, Group B—each cow received 25 kgs of roughage per day + 3kgs of Molasses/Bagasse/day and 0.6 kg Molasses/Bagasse per kg of milk produced. After 23 weeks the condition of the animals undergoing both treatments had deteriorated considerably; the experiment was stopped.

10.09 The summarised results are the following:

<i>Milk Production</i>	<i>Group A kgs</i>	<i>Group B kgs</i>
Total Milk Production	22,043	30,177
Average per cow/day	3.84	4.39
Live weight		
Average initial	396	359
Average final	346	341
Average loss in weight during		
23 weeks	23	18

It is presumed from above that when the energy component of a dairy ration is the form of sugar (instead of starch) and with low levels of lipids the lactating animals tend to utilize their body reserves to sustain even low levels of milk production.

10.10 Research in the use of Bagasse/Molasses as a dairy feed continued and during 1973-74 the following treatments were being looked into:

- (a) forage only.
- (b) forage + the standard Molasses/Bagasse feed at the rate of 600 gms per kg of milk produced.
- (c) forage + the standard Molasses/Bagasse feed but with 25 per cent of the Molasses being replaced by ground maize and fed at the rate of 500 gms/kg milk produced.
- (d) same treatment as (c) but without groundnut cake also fed at the rate of 500 gms/kg of milk produced.
- (e) received forage + the usual cowfeed at the rate of 500 gms per kg milk produced.
- (f) received forage + groundnut cake at the rate of 100 gms per kg of milk.

10.11 *Results of experiments concerning the rearing of dairy calves by the restricted suckling method:* All calves received colostrum for 5 days after carving after which they were submitted to two treatments.

Treatment A. 30 minutes after each daily normal milking, the calf was allowed to suckle its dam (Milk consumed by calf being obtained by weighing calf before and after suckling).

Treatment B. Traditional pail feeding of calf with milk. All calves were weaned at 90 days and molasses/bagasse feed was offered ad lib. to all calves.

Results

		Curepipe L.B.S.		La Brasserie Restricted Suckling
		Average Feeding	Restricted Suckling	
No. of calves	...	28	14	15
<i>Live weight (kgs)</i>				
At Birth	...	31.0 ± 0.8	29.6 ± 0.9	30.1 ± 1.2
At weaning	...	75.0 ± 2.5	70.5 ± 5.1	59.6 ± 3.5
Average Daily Gain	...	0.417 ± 0.18	0.407 ± 0.409	0.334 ± 0.031
Age at Weaning days	...	106	99	90
<i>Milk Consumption</i>				
Total (kgs)	...	410 ± 14	319 ± 31	264 ± 9
Per Day (kg)	...	3.86	3.22	2.94
Kg Milk per kg weight gain	...	10.1 ± 0.72	9.24 ± 1.06	10.4 ± 1.16

The average daily gain in weight and the milk consumption per kilogram weight gain did not differ significantly (P: 0.01).

The results show that there is no significant difference between the performance of calves fed on either the restricted suckling and bucket feeding method, however, the benefit in favour of the restricted suckling method is derived from the fact that calf of each cow is being fed after the cow has been completely milked i.e. over and above its normal milk production. In the case of bucket feeding it is part of the milk produced that is being fed to the calf.

10.12 *The effects of supplementing the feed of young Zebu fed high levels of liquid molasses, urea, fish meal with five different levels of ground maize regarding growth and control of molasses toxicity:* 615 Young Zebu bulls, average weight, 180 kgs were used and allocated to five groups of three. The experiment lasted 195 days and the animals were weighed every 21 days. The other components of the daily ration being: Green Fodder 3 per cent of body weight; Molasses ad lib; Urea 2 per cent of Molasses; Fish Meal 5 per cent of Molasses, Minerals (50 per cent Dicalcium Phosphate and 50 per cent NaCl. at Lib.)

Levels of ground maize fed (per cent of live weight).

			Group A	Group B	Group C	Group D	Group E
Theoretical	...	...	0	0.25%	.50%	.75%	1%
Actual	...	...	0	0.213%	.441%	.634%	0.835%

No. of heads	...	...	3	3	3	3	3
<i>Results</i>							
<i>Average Live Weight Kgs</i>							
Initial Weight Kgs	...	...	179.6	180.3	178.6	180.6	179
Final Weight Kgs	...	...	257.3	280.0	281	305.3	321
Average daily gain kgs	...	...	0.398	0.511	0.525	0.639	0.759
Total DM consumed (kgs/head/day)	...	...	5.78	5.52	6.72	6.85	8.33

CONVERSION

Kg DM/kg live weight

Gain	...	...	14.52	12.76	12.80	10.72	10.97
Cost in Rs per kg gain	...	...	Rs 3.21	Rs 3.47	Rs 4.09	Rs 4.01	Rs 4.37

Addition of increasing amounts of maize improved, the average daily gain, the voluntary dry matter intake and the feed conversion rate. But increasing proportions of maize in the daily ration was uneconomic as it also increased the cost of production. None of the 15 animals suffered from molasses intoxication.

10.13 In another experiment the same 5 levels of maize, as in the previous experiment, were fed and supplemented by groundnut cake (15 per cent of the Molasses) instead of urea and fish meal. 15 young Zebu bulls, averaged weight 129 kgs, were allocated to five groups of three; the experiment lasted 195 days and the animals were weighed every 21 days.

The summarized results are:

		Group A	Group B	Group C	Group D	Group E
No. of heads	...	3	3	3	3	3
<i>Average Live Weight kgs</i>						
Initial kgs	...	129.6	129.0	129.0	128.3	128.6
Final (kgs)	...	168	161	215.7	185.3	202.5
Average daily gain kgs	...	0.197	0.164	0.444	0.292	0.323
Total dry matter consumed (kgs/head/day)	...	4.43	3.82	5.09	4.80	6.03

CONVERSION

Kg dry matter/kg live weight gain	22.5	23.29	11.46	16.44	18.67
Cost in Rs per kg gain	Rs 5.50	Rs 6.52	Rs 3.88	Rs 6.01	Rs 7.57

It has thus been found that in a fattening ration based on liquid molasses, groundnut cake at the level of 15 per cent the molasses was less efficient than when the ration contained Fish meal at the rate of 5 per cent of Molasses plus Urea at the rate of 2 per cent of Molasses. Further the addition of increasing amount of maize improved slightly the average daily gain (kgs) but not significantly. No molasses intoxication occurred in any of the five groups.

PERFORMANCE TESTING OF BULLS FOR BEEF PRODUCTION

10.14 Four *Bos indicus* bulls were placed on performance testing and in mid June 1973 the results were the following:

		Bull No. 51	Bull No. 241	Bull No. 243	Bull No. 247	Average
Initial age (days)	...	117	183	170	120	147.5
Final age (days)	...	316	382	369	319	346.5
Initial weight (kgs)	...	124	144	114	106	122
Final weight (kgs)	...	316	313	273	255	289
Daily gain (grams)	...	965	849	799	749	840
Average daily gain since birth (grams)	...	1,000	819	740	799	840

On the standard high level ration provided, the performance of bull No. 51 was superior to that of the other bulls.

10.15 The use of untreated and steam treated bagasse pith as a roughage source for fattening young bulls on a diet of high levels of liquid molasses.

Twenty four young creole bulls in three groups were controlled for 247 days. They received the basic high molasses feed i.e. Fodder 3 per cent of Live Weight, Fish Meal 5 per cent of molasses, Molasses containing 2 per cent Urea and minerals being supplied ad lib.

Group A received an additional $1\frac{1}{2}$ lb of maize per head per day.

Group B received untreated bagasse pith ad lib.

Group C received Bagasse pith which had been treated (at 150° for 90 minutes) ad lib.

The results are summarised as follows:—

			<i>A</i>	<i>B</i>	<i>C</i>
			<i>Maize Meal</i>	<i>Untreated Bagasse Pith</i>	<i>Treated Bagasse Pith</i>
No. of animals	...	...	7	8	6
Average: Initial weight (kgs)	...	...	145.9	153.2	148.3
Average: Final weight (kgs)	...	...	304.5	266.2	271.6
Average: Daily gain (kgs)	...	...	642	457	499
Cost per kg gain (Rs)	...	...	Rs 3.45	Rs 4.17	Rs 4.22

There was a significant difference between the daily gain of the group which received maize when compared to the groups received both untreated and treated bagasse pith but there was, however, no significant difference between the performance on treated and untreated bagasse pith. Two animals in group B suffered of Molasses toxicity.

IN VIVO DIGESTIBILITY TRIALS

10.16 *In vivo* digestibility tests were carried out at Reduit Farm using fistulated bulls. The samples to be investigated were placed in small bags made of nylon fibre and introduced for 72 hours in the rumen of the fistulated bulls. The samples were weighed before and after treatment.

Bagasse pith from Mauritius showed an average digestibility of 25.8 per cent.

Raw bagasse from Mauritius showed an average digestibility of 22.8 per cent.

Raw bagasse from Trinidad showed an average digestibility of 17.5 per cent.

Raw bagasse from Peru showed an average digestibility of 20.8 per cent.

Setaria grass (control) showed an average digestibility of 68.2 per cent.

Work at New Belle Isle Estate

10.17 In a preliminary observation on 26 young creole bulls fed on the basic liquid molasses ration with urea, fish meal, mineral and restricted fodder; the animals had averaged a daily gain of 710 grams over a period of 201 days, at prevailing prices of feedstuffs, the cost was about Rs 2 per kg live weight gain. Molasses intake was very good at a level of 6.4 kgs/head/day and a conversion rate of 9.0 kgs molasses per kg live weight gain.

Comparison of fish meal, groundnut cake and formaldehyde treated groundnut cake as source of natural protein in fattening rations for young bulls fed high levels of liquid molasses and urea and restricted grazing

10.18 This experiment was also carried out at New Belle Isle Estate: Three groups of 11 young creole bulls were used; however, two had to be removed at an early stage. It took 26 days to get the three groups gradually to their respective diets. The basic diet consisting of liquid molasses containing 2 per cent Urea together with a mixture of equal parts of Dicalcium Phosphate and salt were being fed *ad lib* to the three groups. The three groups were allowed to graze *Leucaena Leucocephala* twice a day for approximately 1½ hour each time. The natural protein supply was 300 gms of groundnut cake per head per day to Group C.

Treatment of Groundnut cake: 2.5 litres of a solution containing 37 per cent formaldehyde was sprayed on 100 kgs groundnut cake and well mixed; then the mixture was stored for about a week in sealed plastic bags.

The experiment lasted 162 days.

The results are as follows:

		<i>Group A Fish Meal</i>	<i>Group B Ground nut cake</i>	<i>Group C Trea- ted ground- nut cake</i>
No. of animals		10	11	10
Average : Initial Live weight (kgs)		200.9	185.0	193.7
Average : Final Live weight (kgs)		305.4	284.8	297.6
Average daily gain (kgs)	...	0.645	0.616	0.641
Cost of feed per kg. live weight gain (inc. of fodder, labour, de- preciation on building, etc.)		Rs. 2.61	2.11	2.06

At the time the experiment was carried out the market value of young bulls was Rs 5/kg live weight at the farmer's gate.

OTHER RESULTS—ANALYSES OF RUMEN FLUID

10.19 The Rumen fluid of some of the animals undergoing experiments were extracted and forwarded to the "Station de Recherches sur les ruminants Inra, Theix France" for analysis of volatile fatty acids.

The results were the following:

VOLATILE				
	A	B	C	D
	Average V.F.A. in Rumen Fluid of heifers receiving liquid molasses Urea + Steam treated bagasse ad lib.	Average V.F.A. in Rumen Fluid of bulls receiving liquid molasses Urea + Maize 1½ lb/head/day	Average V.F.A. in Rumen Fluid of bulls receiving liquid molasses + urea untreated bagasse pith ad lib	Same as C with steam treated bagasse pith repla- cing the untreated pith
Acetic ...	56.78	50.86	57.26	54.18
Propionic ...	29.19	14.71	17.74	19.12
Isobutyric ...	.35	—	—	—
Butyric ...	12.42	31.44	21.97	23.93
Iso-Valeric ...	0	1.89	—	—
Valeric ...	1.29	.76	2.40	2.08
Caproic ...	—	—	—	.055
Total acidity Mill-moles/1 ...	65.63	47.15	41.86	56.26

TRIALS ON SUGAR ESTATES

10.20 As reported last year the feeding of Zebu and Creole bulls, with high levels of molasses, fish meal, urea, etc., gave good results in the experiments carried out at Palmar in 1971 and concluded in 1972. It was decided to carry out similar fattening trials on a few sugar estates keeping herd cattle.

At St. Antoine S.E.

10.21 The Standard liquid molasses, cum, urea, fish meal feeding technique with some variations was implemented with a group of 14 Zebu. The trial lasted 348 days—

The animals received molasses containing 2 per cent Urea *ad lib*; they also received elephant grass as fodder at the rate of 3 per cent live weight. For the first 7 months they received a Mineral mixture (50 per cent Dicalcium Phosphate, 50 per cent salt) at the rate of 50 grams/head/day and subsequently and up to the end of the trial this mixture was provided *ad lib*. The source of natural protein was fish meal provided at the following rate:

600 grams per head per day during 1st month

400 grams per head per day during 2nd month

300 grams per head per day during 3rd month

200 grams per head per day during 4th month

285 grams per head per day during 7th month to end of experiment.

The initial average live weight of the animals was 187.8 kgs.

The final live weight of the animals was 274.9 kgs.

The average daily gain was 250 grams.

At Beau Rivage S.E.

10.22 The same trial was repeated at Beau Rivage S.E. with 15 Zebu steers. The trial lasted 346 days. The treatment was the same as at St Antoine except that in view of high incidence of molasses toxicity prevailing the ration was supplemented with maize at the rate of 500 gm/head/day, for the first five months and subsequently at the rate of 1kg per head/day; even this relatively high level of starchy feed did not control the molasses toxicity and the daily gains were very poor.

Average initial live weight of steers	...	189.9 kgs
Average Final live weight of steers	...	239.4 kgs
Average daily gain kgs of steers	...	299 gms

At Mon Trésor—Mon Désert S.E.

10.23 The same trial was repeated at Mon Trésor—Mon Désert S.E. with 12 Créole bulls for 342 days and 20 Zebu steers for 263 days.

The ration was the same as the one given at Beau Rivage.

(NOTE: For limited periods maize had to be replaced by cassava and fish meal by groundnut cake—the protein level being kept at a constant level).

There was no molasses toxicity amongst the Zebu but some five weeks after the start of the trial, it was observed in the creole group and the molasses consumption was then at the level of 3.6 kgs per 100 kgs live weight.

The results are as follows:—

	<i>Creole</i>	<i>Zebu</i>
Average initial live weight (kgs)	... 167.4	142.1
Average final live weight (kgs)	... 345.7	263.7
Average daily gain (grams)	... 521	462

Based on prevailing prices these animals were worth Rs 5.00/kg live weight when sold for slaughter at the farmer's gate. And the feeding costs excluding fodder, labour and depreciation of building was Rs 5.31/kg live weight gain for the Creole and Rs 5.45/kg live weight for the Zebu.

At Constance—Lagaité S.E.

10.24 10 Zebu steers were placed on trial and fed the standard liquid molasses, urea, fish meal ration. Many of the animals suffered from molasses intoxication and during the first 149 days the average daily gain was only 136 grams. During the next 140 days that the experiment lasted they were provided over above the normal ration with 1 kg of ground maize per head per day. The molasses toxicity was considerably reduced and during this period the animals gained an average of 621 grams daily and during this last 140 days the cost of feed (exclusive fodder) was Rs 3.93 per kg live weight and the expected sale price at farmer's gate was Rs 5.00/kg live weight.

10.25 The effect of supplementary "Selenium" on performance of bulls fed high levels of molasses:

The variations in performance of cattle fed high levels of liquid molasses observed from different areas on the island suggested a possible deficiency of trace elements. The addition of cobalt to the diet had been without effect. Dr. Wong of M.S.I.R.I. suggested that there could be a Selenium deficiency in the liquid molasses diet or that the limited amount of Selenium present in the molasses was not available through the presence of interfering radicals such as SO_4^{+} .

Two treatments were compared:—

- (i) Group A receiving Selenium at the rate of 25 milligrams per head every 28 days.
- (ii) Group B untreated control.

The experiment was carried out with fattening animals at Curepipe L.B.S., New Belle Isle Estate, Mon Désert—Mon Trésor Estate, Beau Rivage Estate, Savannah Estate, Belle Mare Estate, Saint Antoine Estate.

Statistics for 13,135 animal days were compiled and analysed for groups A and B. The average daily gain for Group A was 442 grams/head/day and for Group B 451 gms/head/day, this difference not being statistically significant. It was concluded that there was no response to the administration of Selenium.

SALE OF MOLASSES/BAGASSE FEED

10.26 As follow up the World Food Program 310 Project, Molasses/Bagasse Feed manufactured for the Ministry at St. Antoine Sugar Estate continued to be sold at a subsidized rate in six concentration zones namely—Plaisance, St. Paul, St. Pierre, Montagne Blanche, Triolet and Palma.

Molasses/Bagasse Feed was available for sale from January 1973 to July 1973 and in November and December 1973. During the period July to November 1973 when no molasses/bagasse feed was available a Modified Cowfeed manufactured at Livestock Feed Factory was offered for sale at subsidized rates in the concentration zones. A total of 301.782 metric tons of Bagasse/Molasses feed was sold during the year and a total of 110.160 metric tons of modified cowfeed during the period Bagasse/Molasses was not available.

10.27 The S.A.H.O. designed a piggery for tropical conditions and a prototype was constructed at Palmar Livestock Station.

XI. Fisheries Division

HEAD OF DIVISION: J. D. ARDILL, DIVISIONAL SCIENTIFIC OFFICER

DUTIES

11.01 The duties of the Fisheries Division are to conduct the research and development needed for the localisation and exploitation of stocks of fish in the waters of Mauritius and its dependencies and in adjacent international waters, the assessment of such stocks in view of their rational management and the formulation of regulations for that purpose, to conduct research and assure the necessary extension for the development of aquaculture in both fresh and salt water, and to advise on practices of processing and marketing of fishery products.

STAFF

11.02 The staff of the Fisheries Division was composed of one Senior Fisheries Officer, two Fisheries Officers, one Assistant Fisheries Officer, one Clerical Officer, one Typist, one Head Guard seconded from the Fisheries Projection Service, two Peace Corps Volunteers, the crews of "Investigator" and "Explorer", and the labour forces of Mahebourg Fish Farm and Trou d'Eau Douce Camaron Hatchery. In addition, two Field Assistants were attached to the division as from March and July.

11.03 Mr. B. Jugnarain, Fisheries Officer in charge of the Camaron Project, died on 18th July 1973. This was a great loss to the division.

LOCAL CATCH STATISTICS

11.04 Tables 1 to 3 show the catch of the local fishery by quarter, by fishing gear and by species. These figures do not reflect all fish landings, as only a proportion of the landing points are controlled by officers of the Fisheries Protection Service for statistical purposes, but are a useful indicator of cash fluctuations.

11.05 The total controlled catch remained stable compared to the two previous years, at two thirds of the average for the period between 1956 and 1960. This would tend to confirm the hypothesis that overfishing has resulted in a situation where fish is caught as soon as it reaches a size attainable by the fishing gear in use. The resulting preponderance of small fish has therefore depressed landings well below the optimum attainable in a properly managed fishery.

11.06 Table 1 shows that landings were about the same in each quarter, with a proportional increase in winter landings. This is probably due to the implementation of the close season, and is undoubtedly a beneficial effect.

11.07 Table 2 shows that the proportion of fish caught by basket trap fishermen decreased again relative to the situation in 1956-1960, but that the landings of the line fishery remained stable. This is undoubtedly due to the fact that the line fishery exploits mainly deep sea stocks which are relatively less subject to increased fishing pressure than the lagoon stocks. It should

be emphasized, however, that even this fishery is close to the limit of exploitation, as this level of production was only attained at the price of a great increase in fishing effort.

11.08 The main features of Table 3 are the continued serious decline in the landings of the most heavily exploited species, particularly *Siganus*, *Naso* and spiny lobsters, together with a marked increase in landings of two seine caught species, the grey and red mullets. The reason for this may be a shift in emphasis on the part of the fishermen with the decline in the catch of more traditionally exploited species.

11.09 Landings by Quarter (x 1,000 kgs).

TABLE 1

		1966-70	1971	1972	1973
		%			%
1st Quarter	...	257 23	224	221	221 24.1
2nd Quarter	...	318 24	325	294	267 29.2
3rd Quarter	...	218 20	184	235	222 24.2
4th Quarter	...	320 29	203	297	205 22.4
TOTAL	...	413 100	935	938	916 100

11.10 Landings by Fishing Gear (x 1,000kgs.)

TABLE 2

		1956-60	1961-65	1966-70	1971	1972	1973
		%	%	%			%
Nets	...	363 24	370 29	253 22	192	198	227 24.8
Basket traps	...	628 41	474 37	420 37	367	346	303 33.1
Lines	...	275 18	216 17	279 25	247	241	241 26.3
Harpoon	...	219 14	196 15	170 15	132	148	138 15.1
Spiny lobsters	...	28 2	21 2	14 1	8	4	6 0.7
TOTAL	...	1520	1288	1140	935	938	916 100

11.11 Landings by Species (kg).

TABLE 3

Species		1968-72	1973	Gear
<i>L. nebulosus</i>	...	28,586	25,698	Seine + Line
<i>L. mahesa</i>	...	38,029	24,884	Line + Seine
<i>L. harac</i>	...	19,861	12,230	Seine
<i>L. reticulatus</i>	...	19,196	27,967	Line
<i>Siganus</i> spp.	...	166,796	114,316	Seine + basket trap
<i>Mugil</i> spp.	...	26,543	50,016	Seine
<i>Mullus</i> spp.	...	37,211	40,950	Seine + basket trap
Serranidae	...	51,744	56,778	Line
<i>Naso</i> spp.	...	141,134	104,815	Basket trap + seine
<i>Panulirus</i> spp.	...	11,523	5,493	Basket trap
Octopii	...	155,222	138,543	Harpoon
Other species	...	344,592	314,002	Basket trap, line & seine

Prices paid to producers did not increase significantly during the year, and the value of controlled catch totalled Rs 1.85 million.

RODRIGUEZ AND ST. BRANDON

11.12 Table 4 shows the imports of dried and salted fishery products from Rodrigues; imports dropped by Rs 73,323, owing to a marked reduction in the production of dried octopus. Although only exports are recorded from Rodrigues, indications of overfishing are apparent there also. In St. Brandon, exploitation of available resources is kept well below the maximum permissible level, and there is no cause for concern.

TABLE 4

		1971	1972	1973
<i>Rodrigues</i>				
Dried Octopus (kg)	...	78,435	161,205	89,703
Value (Rs)	...	163,893	341,753	264,086
Salted fish (kg)	...	182,990	128,222	125,136
Value (Rs)	...	368,986	291,638	295,982
<i>St. Brandon</i>				
Dried Octopus (kg)	...	—	—	—
Value (Rs)	...	—	—	—
Salted fish (kg)	...	—	—	334,778
Value	...	—	—	1,004,334
<i>Agalega</i>				
Dried Octopus (kg)	...	—	—	—
Value (Rs)	...	—	—	—
Salted fish (kg)	...	—	—	—
Value (Rs)	...	—	—	—
Total net weight (kg)	...	758,155	1,062,469	1,368,343
Total value (Rs)	...	532,876	633,391	1,564,402

THE DISTANT WATER FISHERY

11.13 The production of iced and frozen fish from the distant water fishery dropped to 1,087 tons in 1973, from an average of nearly 1,400 tons for the previous five years. This was mainly due to the fact that the "Stella Maru" was laid up for six months of the year for repairs to the electrical and refrigeration equipment.

11.14 The long line fleet based on Port Louis produced 15,230 tons of tuna, of which 127 tons were sold locally, from 173 cruises. It appears that this figure is about the maximum sustained yield for the stocks exploited by this fleet, as the plateau is maintained despite fluctuations in fishing effort. The low yield per unit effort, however, would greatly discourage any new investment.

UNDP/SF FISHERIES DEVELOPMENT PROJECT

11.15 The Project Manager for the Fisheries Development Project, Mr. Keith Cox, left Mauritius in April 1973, having remained in Mauritius for one year after the termination of the project as aquaculture adviser, concerned mainly with the implementation of the oyster project. No final report has yet been received on this phase of this project.

PLAN PROJECT

Skipjack and Shark Project

11.16 A programme of shark fishing by means of both drifting and anchored long lines was carried out in the waters of Mauritius and of Rodrigues by FRV 'Investigator'. The work in Rodrigues, where the most use was made of floating lines, was repeatedly interrupted by the approach of cyclones to that island, but, as was indicated by the results from late 1972 it appeared that the reefshark fishery is probably a winter fishery only, the result obtained by SRTM "Marlin" not being duplicated.

11.17 In the trials with anchored lines in shallow water, a number of sharks nearly all large tiger sharks (*Galeocerdo cuvieri*) were caught, but many snoods and hooks were broken by even larger specimens. Catch rates diminished rapidly in any region fished repeatedly, and it appeared doubtful whether the establishment of a fishery would be justified.

11.18 A continuation of the skipjack survey started by PVC James Weeks on "Explorer" was carried out by Assistant Fisheries Gajeelee. This provided further data on distribution of fish schools but catch rates from the trolling gear being developed were again disappointing due to the unsuitability of "Explorer" for the purpose. Consequently, plans were prepared for a new vessel based on a 34 ft. fibreglass hull designed by P. Bolger of Boston, Massachusetts.

CAMARON PROJECT

11.19 Trou d'Eau Douce Camaron Hatchery was almost completely reconstructed in late 1972 and early 1973 under the direction of Fisheries Officer B. Jugnarain, in order to increase its production capacity and allow year-round production of post larvae. Operation of the hatchery removed in March, and experiments were conducted to determine optimum larval stocking rates etc. Despite the enclosure of the hatchery, problems of temperature were encountered with winter production. Also, phytoplankton growth in the indoor tanks was very poor, which in turn made larval rearing difficult. In October 1973, a further problem was encountered, with the infestation of the larval rearing tanks by Medusae which were found to kill larvae. The result of these problems was a much lower juvenile production than projected, some 100,000 only having been produced by the year's end.

11.20 The untimely death of Mr. Jugnarain in July increased the work load on the officers engaged on this project significantly, and Dr. R. Thompson, Peace Corps Volunteer, had to assume direction of technical operations.

11.21 During the year, sampling was carried out systematically at all ponds sites, and growth of prawn appeared satisfactory in all low altitude ponds. The ponds stocked at Curepipe Experimental Station, however, gave poor growth and survival, so that a feeding experiment had to be abandoned. It was decided to attempt a summer stocking exercise at high altitude ponds where low temperature appear to be a problem. Plans were prepared for the proposed multi-purpose hatchery at Albion, with the help of an IVS Engineer, Mr. V. Hobcroft. These plans were vetted by Mr. Fujimura, and will form the basis for the development of this hatchery. The hydrological measurements made in the dry season, however, indicated that an alternative freshwater source would have to be found.

Marine Parks and Public Aquarium and Research Laboratory

11.22 There was no progress on either of these projects, pending the arrival of consultants from F.A.O.

Fish Culture

11.23 Following requests made in 1972, 25,000 fingerlings of the Indian Carp *Calla catla* and *Labeo rohita* were received as a gift from the Indian Government in September. Unfortunately, over half the fish were dead on arrival, the shipment having been delayed in Bombay by an airline strike. The fish were stocked in two ponds at Curepipe Experimental Station, but by the end of the year, it appeared as if there were few survivors.

11.24 Reconditioning of barachois was continued by the Development Works Corporation at Grand Gaube, Fountain Bay and St. François Estate. None had, however, been completed by the year's end.

RODRIGUEZ

11.25 The financial situation of the Rodriguez Fishermen's Cooperative improved further in 1973, at the end of which year there were some Rs 10,000 in reserve. As during the previous year, the Cooperative was managed by Mr. K. Reintsma who, on the termination of his contract with the U.S. Peace Corps in August, was offered a nine month contract by the Government.

11.26 Carpenters of the Ministry of Agriculture were engaged throughout the year on the construction of a 35 ft. F.A.O. designed boat for the Cooperative.

CONSULTANT VISITS

11.27 In order to advise the Government on the research which should be conducted in the shelf and distant water fisheries, the British Overseas Development Authority commissioned the White Fish Authority to provide consultant services.

11.28 Mr. H. Mac Diarmid arrived on 15th May and stayed for five weeks, during which he made several outings on "Explorer", and one cruise on "Investigator" to St. Brandon, and had meetings with the private sector firm engaged in the fishing industry. The head of the mission, Mr. R. Bennette, arrived on 12th June and stayed for one week.

11.29 As a result of this visit, a report was submitted to the Ministry making recommendations for the development of the Fishing Industry.

XII. Plant Pathology Division

HEAD OF DIVISION: G. M. LALLMAHOMED, DIVISIONAL SCIENTIFIC OFFICER

12.01 The Plant Pathology Division is concerned with the prevention and control of plant diseases. It is also advisory: results of research experimentation are communicated to the Extension Services of the Ministry. The Quarantine Service of the Division implements legislation regarding phytosanitary control.

RESEARCH INVESTIGATIONS

Bacterial wilt (Pseudomonas solanacearum) strains

12.02 The research programme on bacterial wilt strains continues. So far the following have been completed: Physiological and taxonomic studies, pathogenicity and pathotype determination, biochemical properties and biotype determination.

12.03 Physiological and taxonomical studies were not of any significant value in strain differentiation. Pathogenicity experiments had established the existence of different pathotype groups based on wilt symptoms and pathogenic potential of the isolate. The following groups had been tentatively designated:

- A. Potato, tomato, *Solanum nigrum*, eggplant and bean
- B. Chilly and groundnut
- C. Ginger
- D. Filao
- E. Tobacco

12.04 Infiltration experiments were carried out on tobacco leaves Cvs. Yellow Mammoth and Burley have established the existence of Races 1 and 3 of the bacterium in Mauritius. Race 1 is known to be pathogenic to tobacco and other solanaceous hosts whereas Race 3 is pathogenic to potato, tomato but only weakly pathogenic to other solanaceous hosts and it is also non pathogenic to tobacco. Race 2, the banana race has so far not been recorded. Of the four known biotypes of *Pseudomonas solanoccarum*, only biotype 2 has been distinguished among the 70 isolates tested.

Ginger and Turmeric leaf blight

12.05 *Pyricularia spp.* have been repeatedly isolated from blighted leaves of ginger and turmeric. Pure cultures of the fungi have been examined microscopically and believed to be different species. Pathogenicity experiments have however been erratic. Slight disease control has again been possible by M/45 sprays at weekly intervals.

CHEMICAL CONTROL OF PLANT DISEASES

Pea spray-timing fungicide trial

12.06 The effect of number of fungicidal spray on the control of pea powdery mildew (*Erysiphe polygoni* D.C.) was again studied in spray-timing trials at Plaisance, Pamplemousses and Barkley Experiment Stations. The design adopted was a latin square split plot design with spray timings as main treatments and fungicides as subtreatments. Results have confirmed a significant increase in yield and better disease control with Benlate ($\frac{1}{2}$ g/litre) and Thiovit (2g/litre). Four to six sprays should be performed at weekly intervals for significant disease control. Results are tabulated below:—

Mean yield/replicate (Kg—dried seeds)

No. of sprays		Plaisance E.S.	Pamplemousses E.S.	Barkly E.S.
A—6 sprays ...	...	837 a	1,235 a	942 a
B—5 sprays ...	...	640 a	1,077 a	715 a
C—4 sprays ..	...	460 a	1,096 a	680 a
D—3 sprays ...	...	380 b	778 b	793 a
E—2 sprays ...	...	395 b	773 b	540 b
No SPRAY	...	339	553	489

The small letters indicate Duncan's multiple range groupings of treatments which do not differ significantly.

ASSESSMENT OF RESISTANCE TO DISEASES

Tobacco

12.07 Newly introduced tobacco varieties were assessed for resistance to black shank and rootknot nematodes in variety trials conducted by the Agricultural Division. Results are tabulated below:

variety		Mean Rootknot Index		Black shank Index
		1st season 1973	2nd season 1973	2nd season 1973
SC 66 ...	...	4.4 a	10.4 a	0 a
NC 95	...	3.2 a	16.0 ab	0.5 ab
Yellow Mammoth	...	29.0 bc	29.7 bcd	1.0 abc
Kutsaga E 1	...	36.9 c	46.7 d	3.5 c
Kutsaga E 2	...	31.5 bc	35.9 cd	2.7 bc

The small letters indicate Duncan's multiple range grouping of treatments which do not differ significantly.

Results have confirmed the high tolerance of varieties SC 66 and NC 95 to rootknot nematodes. Varieties Kutsaga E₁ and Kutsaga E₂ compare favourably with yellow Mammoth in tolerance to black shank but they are highly susceptible to rootknot nematodes.

OCCURANCE OF DISEASES

Tea

12.08 Root-rot and defoliation of tea cuttings were reported from Wooton in August. A survey carried out at the TDA plantations revealed a high percentage (20—46%) of dead or dying plants. Waterlogging could have been the main cause of death.

Tobacco

12.09 Main diseases of tobacco were veinal necrosis (a strain of Potato virus Y) and Mosaic. The former was specially prevalent on variety NC95. A leaf spotting, probably "weather flock" was destructive to lower mature leaves of varieties SC 66 and NC 95. The variety Yellow Mammoth appeared to be tolerant to the disease.

Onion

12.10 Pink root rot (*Pyrenochaeta terrestris*) and purple blotch (*Alternaria porri*) were again reported from all onion growing regions.

Ginger and Turmeric

12.11 The unidentified leaf blight was again destructive to foliage in the humid and superhumid areas. M/45 sprays at weekly intervals prevented the disease to some extent in some areas.

Chilly

...

12.12 Mosaic and Powdery mildew (*Leveillula taurica*) were unusually severe in many localities. A dieback of plants which had just started blooming occurred at La Marie. The disease was specially destructive after heavy rains.

Eggplant

12.13 Wilt caused by *Phomopsis vexans* reached alarming proportions throughout Mauritius. Introduced varieties of eggplant are being assessed for resistance to the disease.

12.14 The diseases listed below were recorded for the first time in Mauritius during 1973:

Anthurium sp. Leaf spot: *Pestalotia* sp. and *Stemphylium* sp. Cowpea (*Vigna* so.)—Rust: *Uromyces* sp. Soyabean (*Glycine soja*) bacterial wilt: *Pseudomonas solanacearum* *Lagonstroomia regia*—Poultry mildew: *Erysiphe* sp. Pawpaw (*Carica papaya*)—Leaf and fruit spot: *Asperisporium caricae* Tobacco (*Nicotiana tabacum*)—Leaf spot and deformations: Tomato spotted wilt virus.

QUARANTINE SERVICES

12.15 During the year 560 permits were issued for the importation of plant material. Phytosanitary certificates issued for the exportation of ginger, onion, garlic, groundnut, cut flowers, fresh fruits and vegetables numbered 2,760. Prior to the landing of imported frozen animal products, 314 permits were issued on behalf of the Division of Veterinary Services. At the parcels Post Office, 38 items of plant material were intercepted, 16 were destroyed and the remaining number were released after the presentation of appropriate phytosanitary certificates.

12.16 Phytosanitary control was exercised during the arrival of 1807 planes and 117 ships. Items of plant and animal material were intercepted during 914 instances. An increasing number of plant species have been introduced into Mauritius and released from Quarantine during the year: *Citrus* sp., strawberry, guava, chinese-gooseberry, grapevine, *Amhestia nobilis*, mango budwood, litchi, jadevine, *Strellizia reginae*, tea and 40 rice varieties.

Miscellaneous

12.17 The Senior Plant Pathologist attended the 2nd International Congress of Plant Pathology held at Minnesota, USA, from September 5th to 12th, 1973. He also spent three weeks on a study visit at the Plant Bacteriology Department of the Institute of Phytopathological Research at Wageningen, Netherlands.

12.18 Mr. J. Bucha and Mr. M. Pillay were appointed Plant Pathologist on 2nd July and 27th August 1973 respectively.

XIII. Agricultural Chemistry Division

HEAD OF DIVISION: S. BELCOURT, DIVISIONAL SCIENTIFIC OFFICER

13.1 The Chemistry Division was mainly concerned in carrying out analytical work for farmers and in connection with experiments conducted by other Divisions, by the F.A.O. Milk and Meat Project and by the Northern Plains Irrigation Project and for the Livestock Feed Factory in connection with the preparation of feeds.

WATER

13.2 Water samples were analysed to assess the quality for camaron hatchery and rearing. An average analysis for the hatchery ponds was found to be:

pH 6.7; Ca 16 mg/l; Mg 13.6 mg/l; Na 47 mg/l Cl 78.1 mg/l;
So₄ 12.7 mg/l.

TOBACCO

13.3 The survey which started the previous year was continued. Fields of about 2 acres planted in tobacco were selected in the following regions:

Richelieu Experiment Station	Yellow Mammoth
Richelieu Area	" "
Pamplemousses Area	NC 95
Ile d'Ambre	Yellow Mammoth
l'Etoile	" "

13.4 Leaves from these selected fields were sampled regularly after each curing and taken for analysis during the summer season. The following points were observed. Chlorine was found to be definitely very high, being in the range of 3—5 per cent. However a peak of 6.5 per cent was reached in 2—3 cases. Potassium was found to decrease from the base of the plant to the top; the range being 3.5 to 1 per cent, while nicotine was found to increase ranging from 1.5—4.5 per cent.

SILICA

13.5 Analyses were carried out to determine the silica content of the soil before and after experiment as well as those of maize cobs and leaves at harvest in connection with an experiment to compare the effect of basalt dust and calcium silicate at Richelieu Experiment Station. No significant difference was noted between application of basalt dust and calcium silicate, and the control.

13.6 At Curepipe Experiment Station a similar experiment was carried out on *Setaria* grass; after each cut of *setaria* the fodder as well as the soil for each plot was analysed. The experiment continues.

SOIL

13.7 Soil samples were analysed for the Extension Service, the Tea Division and in connection with experiments carried out on rice at Queen Victoria.

GINGER

13.8 In relation to fertilizer and spacing trials carried out at Plaisance Experiment Station, samples of ginger were analysed for each experiment for their level in dry matter, ether extract, ash and fibre.

FEEDS AND FODDER

13.9 Analytical help was given to the Milk and Beef Project. Samples of fodder and feed were analysed regularly for various components.

PESTICIDES

13.10 The pesticides laboratory started to function on an initial stage as from September. Pesticides were studied using different solvent systems for the development in chromatographic analysis. Different chromogenic spray reagents for the identification of compounds were also studied. A series of organo chlorine and organo phosphorus pesticides were studied.

13.11 Methods were also studied for the determination of pesticide residue in crops. New methods were looked for and tried.

13.12 Several crops were analysed for the identification of pesticide residues. The following were tested: tomatoes, *Luffa acutangula* (Pipengaille), *Hibiscus esculantus* (Lalo), *Trichosanthis anguina* (Patole), *solanum melongena* (Bringelle).

XIV. Dairy Chemistry Division

HEAD OF DIVISION: J. E. PABLOT, DIVISIONAL SCIENTIFIC OFFICER (DAIRY)

DAIRY LABOTARY AND PASTEURISATION CENTRE

14.1 Within the framework of a milk survey which started on the 29th May, 1973, twenty samples of milk collected directly from cowkeepers by the staff of the laboratory were analysed daily to assess their chemical as well as microbiological quality. The following determinations were carried out:

Fat, protein, solids non fat, density, freezing-point, total acidity, coliform count, total bacteria count.

Work is still continuing.

MONTHLY AVERAGE FOR THE MONTH OF DECEMBER, 1973

Fat %	:	3.43	Freezing point	:	—0.537°C
Protein %	:	3.20	Total acidity	:	16.5
SNF %	:	7.94	Coliform Count	:	640/ml
Density	:	1.028	Total bacteria Count	:	94000/ml

14.2 In addition to the milk survey, samples of milk from the Animal Production Division were daily analysed for fat and protein content. Milk, milk powder and dairy products were also analysed at the request of the Veterinary Division and the University of Mauritius.

14.3 Practical courses on quality control of milk were given to students of the University of Mauritius at different periods of the year. Following short theoretical and practical courses on milk and quality control of milk organised in April 1973 at the request of the Ministry of Cooperatives and Cooperative Development for collectors of milk cooperatives, certificates were delivered to them by the Permanent Secretary of the Ministry of Agriculture and Natural Resources. Facilities were also granted to individuals of the private sector who were engaged in the manufacture of dairy products.

14.4 Raw milk from cows at Curepipe Livestock Breeding Station and from (Pakistani cows) Abercrombie Station were pasteurised at Curepipe Pasteurisation Centre and samples were taken for analysis.

XV. Entomology Division

HEAD OF DIVISION: M. J. L. MONTY, DIVISIONAL SCIENTIFIC OFFICER

15.1 The work of the Division of Entomology during 1973 consisted mainly in research on stable flies and on Sericulture. Other duties comprised routine inspection of crops, advice to planters for the control of pests and attendance on the Pesticides Control Board for the regulation of pesticide usage.

STAFF POSITION

15.1.2 The Scientific Officer, Mr. A. Joomaye, left the Division in July to follow a 2-year course in India for the award of a Master's Degree in Entomology. The Scientific Officer, Mr. M. Ramsamy, attended a 2-month course on Radiation Biology at the University of Florida, USA, sponsored by the International Atomic Energy Agency and the FAO.

Dr. S. Kunz from the United States Department of Agriculture (College Station, Texas) was appointed by the FAO for a study of the ecology of stable flies under the Meat and Milk Project financed jointly by the Government and UNDP.

15.2 *Research on Stable flies.*

15.2.1 *Ecology*

Research into the ecology of *Stomoxys nigra* Macquart and *S. calcitrans* L. was started in February 1973 after the arrival of the FAO entomologist in January. Following preliminary visits to various locations around the island, it was decided to concentrate the population studies at two sites, Savannah and F.U.E.L. sugar estates. These two sites offered a more or less stable population of animals kept in the open that would be required on a year-around basis for population studies. After initiating these studies, other studies and surveys were conducted at numerous sites around the island.

As much of the data accumulated throughout the past year have not been fully evaluated, the results of these studies will be presented in a general and summary form.

15.2.1.1 *Population Dynamics*

Moderate infestations of *S. nigra* existed at Savannah in February, 1973. A drought in early summer (October—November) reduced the populations in November and December to levels below those in the winter months. Monthly population fluctuations along with the relative abundance of *S. nigra* and *S. calcitrans* have been determined. Interestingly the *S. calcitrans* population were highest during the months August—November but this species never constituted a problem to the cattle.

At FUEL, the population of *S. nigra* were considerably higher than those at Savannah and remained so for a greater part of the year. Monthly population fluctuations and relative abundance of the two species have been determined. Again, *S. calcitrans* populations increased during the drier-cooler winter months but did not constitute a serious problem when considered separately. This study was terminated in December because the animals were no longer available for observation.

As a general conclusion to these studies, populations of *S. nigra* were highest during the summer months and of *S. calcitrans* highest during the winter and early summer. Populations of stable flies were considerably higher at F.U.E.L. than at Savannah. The infestations at F.U.E.L. warranted chemical control throughout most of the year; Savannah infestations did not.

15.2.1.2 *Distribution of Stomoxys Spp.*

Surveys made throughout the year showed that *S. nigra* is distributed primarily throughout the highlands of Mauritius. Very few, *S. nigra* were noted on the drier costal areas. *S. calcitrans*, in relatively low populations, were found in all parts of the island. Even in the drier costal areas where moisture is inadequate for *S. nigra*, *S. calcitrans* has the potential of building up in small localized areas, due to its breeding sites around the straw huts of the individual cowkeepers. These would be considered to be very local and of short duration, solvable through practice of good sanitation measures. It would appear that cattle production could proceed without hindrance from *Stomoxys* in the costal areas on a year-around basis.

15.2.1.3 *Oviposition and Development Sites.*

S. nigra will oviposit and develop in most green cut vegetation uncomtaminated with animal urine. The refuse remaining in the cane fields after harvest constitutes the single greatest breeding source for *S. nigra* during the major fly season. This material is available in the field throughout most of the year but only inadequate moisture and temperature limit the production of flies. Upwards to 50—60 larvae and pupae per cubic metre of sugarcane debris have been found up to a mile from the nearest known cattle. If only one fly per day per cubic metre of debris were produced, the importance of sugarcane fields in *S. nigra* development can well be appreciated considering that over 240,000 acres are grown.

An excellent cultural practice for the control of *S. nigra* would be to burn the cane debris. However, because of economic factors the burning of this material will probably remain limited to its current practice. Because of the vast distribution of the breeding sites, chemical control of the immature stages is not feasible considering the residual life of the insecticide and the often-times heavy rains falling during the times when the treatment is most needed.

Among other favourable vegetation for development of the fly is *Setaria* grass, Elephant grass, Bermuda grass and mixture of cut grass and weeds.

15.2.1.4 *Effect of Moisture on Production of S. Nigra.*

This study has not been completed but indications thus far are that the amount of moisture present in the larval site directly influences the number of flies produced.

15.2.1.5 *Feeding Studies.*

In studies conducted to determine the length of time it takes *S. nigra* to complete feeding, females fed in an average time of 1 min. 40 secs. and males in 1 min. 54 secs. It was noted that when flies fed prior to 10 a.m. they were capable of taking a second blood meal by 4 p.m., thus indicating the possiblity of multiple feedings by this species. Generally, *S. nigra* and *S. calcitrans* exhibited two feeding peaks. Flies fed from dawn to dusk: exposed animals can thus expect attack throughout the daytime.

15.2.2 *Chemical Control Studies.*

Field Trials—Limited herd sprayings with insecticides have been conducted. Spraying tests scheduled to start in early December 1973 could not be started until February due to the low fly populations caused by the extremely dry weather of October and November. Toxaphene, Nankor and Ciodrin were used on three different herds. Ciodrin provided the best control with only limited control afforded by the other materials.

The principal limitation to the use of insecticides in Mauritius is that during those times when insecticides are needed, the rainfall is heaviest resulting in reduced effectiveness. However, if a suitable toxicant can be maintained for 24—48 hours relief from accumulated infestations could be expected.

15.2.3 *Laboratory Studies.*

15.2.3.1 *Artificial Breeding.*

Adult Feeding—Tests carried out on flies fed on citrated and defibrinated blood showed that no significant differences existed between their respective fecundities. Flies fed on defibrinated blood however lived slightly longer than those fed on blood containing 3 to 6 gm. of sodium citrate per litre. At present blood is citrated at the rate of 3 gm per litre and stored at 10°C.

Blood may be prevented from putrefying at a faster rate than usual by the addition of 50 to 100 p.p.m. of Sulphanilamide. No harmful effects have been observed in the general biology of flies given blood containing the drug. Addition of the drug to blood however is restricted only to periods when there are blood shortages and when blood has to be stored for a long period of time.

Larval Rearing.

Other grasses than “Chiendent bourrique” (*Stenotaphrum dimidiatum*) which was used as breeding media during the past year, have proved to be excellent alternative in that respect. Among the most suitable alternatives to “chiendent bourrique”, Elephant grass and sugarcane leaves may be mentioned.

It has been found that neither milk nor any other proteins when added to the larval medium increase pupal output.

Pupal Rearing.

Relative Humidity (R.H.) has a drastic effect on survival during the pupal stage. The effect of R.H. on emergence of adult at various temperatures has been observed and it has been found that pupae must be kept under the following optimum conditions: T: 28°C; R.H.: 80—100 per cent.

Egg. Collection.

Eggs continue to be collected on a damp cloth placed beneath the cages and are recovered by washing the pads in water. It has however been found, that prolonged immersion of eggs could significantly decrease their viability. Precautions are therefore taken to separate the eggs from water as quickly as possible.

15.2.3.2 *Biology.*

The anautogenic nature of *S. nigra* has been established. The female requires at least 4 consecutive blood meals (one meal per day) before being able to oviposit. After the initial blood meals, a female requires at least one meal per day throughout its lifespan in order to continue normal oviposition. When fed in the manner described a female may oviposit up to 1,000 eggs. Longevity is also dependent on blood supply.

After the importance of blood on fecundity and longevity was determined, efforts were made to find out feeding stimulants which may improve blood intake by the flies.

Tests on a wide spectrum of aminoacids have shown that a number of them, notably Leucine, Methionine, Arginine and Isoleucine have phagostimulatory properties.

All of the simple sugars (sucrose, glucose and fructose) have proved to stimulate feeding.

A number of Hexose alcohols, manitol and sorbitol also stimulate probing but do not induce gorging.

The alcohols, methanol, ethanol and propanol, and the acids, formic, acetic, propionic, butyric and valeric do not stimulate probing or engorging. The blood nucleotide, Adenosine Triphosphate (A.T.P.) stimulate gorging at very low concentration e.g. 10 mg/litre; whole blood, serum fraction, cellular fraction, plasma fraction and platelets fractions, all stimulate gorging in starved flies. Cellular fraction and plasma fraction both initiate oviposition when fed to females. The egg laying potential was however found to be much depressed in flies fed on either plasma only or cellular fraction only.

15.2.3.3 *Induced Sterilization.*

(a) Four radiation dosages, 1KR, 2KR, 3KR and 4KR were tested on one day old and 4—5 days old pupae. All four doses of radiation were found to be more damaging to one day old than to 4—5 days old pupae.

The tests also revealed that sterility increased with increasing dosage of gamma radiation. With 2KR, male sterility reached about 95 per cent while with 3KR, sterility increased to over 98 per cent. Female fecundity was completely inhibited with a dosage of 3KR.

(b) Results on competitiveness tests indicate that males radiated with up to 3KR were as competitive as untreated males. In some instances, there were indications that treated males were slightly more competitive than untreated males.

15.2.4 Biological Control of Stable Flies.

15.2.4.1 Parasites from Uganda.

Trials at finding specific parasites of *S. nigra* were continued. The Encyrtid larval parasite from Uganda received in 1972 was identified as *Zetethcontus* sp. It occurs in Kawanda, Uganda at very low densities but is adapted to search for *S. nigra* in piles of wet rotten grass uncontaminated with urine. The parasite was successfully multiplied in the laboratory and releases will be made in 1974.

During the year 20 consignments of stable fly puparia were received from Uganda. These were collected in piles of elephant grass exposed near a cattle farm at Kawanda. The consignments were mixtures of *S. nigra* and *S. calcitrans* and the highest percentage parasitism recorded was 77 per cent during the month of January. The parasites isolated in Mauritius from Ugandan *S. nigra* were identified by the Commonwealth Institute of Entomology as follows:

Encyrtidae: *Zetethcontus* sp.

Pteromalidae: *Spalangia nigroaenea* Curtis

Diapriidae: *Trichopria* sp.

Eucoilidae: *Trissodontaspis* sp.

The Encyrtid and Diapriid are both multiple larval parasites which have not been recorded from Mauritius.

15.2.4.2 Biological Control of Stable Flies in the Sub-humid Zone.

The last three years of research on stable flies have revealed the absence of biting fly problem from the sub-humid localities. In order to establish whether the disappearance of stable flies from dry areas could be due to the action of the introduced Pteromalid parasites, *S. calcitrans* larvae were exposed in the field at Wolmar and at Reduit to record the extent of parasitism. Three weeks after exposure, surviving pupae were recovered and percentages of parasitism were calculated. The results are summarised in the following table:

Percent Parasitism by Pteromalids in *Stomoxys calcitrans* pupae at Reduit and Wolmar, following exposure in the field of laboratory reared 4-day old larvae.

1973	Reduit		Wolmar	
	% Survival in pupae recovered from field	% Parasitism by Pupal Parasites	% Survival in pupae recovered from field	% Parasitism by Pupal Parasites
June	59.93	72.00	87	66.65
July	52.01	36.54	84	47.80
August	77.29	37.05	82.5	22.13
September	27.89	2.86	89	6.07
October	Not available	Not available	54	0.06
November	38.10	0	78	3.13
December	75.21	21.98	76	30.17

The experiments are still in progress, but some conclusions can already be drawn:

- (a) The pupal Pteromalid parasites, mostly *Spalangia* spp. and *Pachycrepoides vindermiae* Rondani are well established in both localities representing the humid and sub-humid areas of the island.
- (b) The levels of parasitism in both areas are not significantly different, so that it can be concluded that the parasites are equally effective in humid and sub-humid regions.
- (c) The parasites are well adapted to find pupae in media which are highly fermented. The control of stable flies in the sub-humid areas can therefore be attributed to their action on *S. calcitrans*.
- (d) The absence of control in *S. nigra* in the humid areas could be due to the fact that the parasites are not adapted to search for their hosts in the sugar cane fields where *S. nigra* mostly breeds.
- (e) The lowest parasitism were recorded during the months of August—November, correlating well with the higher *S. calcitrans* populations recorded during the population dynamics studies (see 15.2.1.1).

15.3 Sericulture.

The trials for the possibility of producing silk in Mauritius were continued. Besides the main experimental station at Reduit, other sites of work were opened at Barkly, Pamplémousses, Mapou, Flacq, Curepipe, Rivière des Anguilles and Plaisance. Small mulberry plantations were established at these stations and two small rearing houses were construed at Pamplémousses and Plaisance. At the other stations rearing was carried out inside existing buildings.

15.3.1 Moriculture

Mulberry plantations were established from cuttings obtained from trees in private gardens. The co-operation of members of the public who willingly offered cuttings and leaves from their mulberry trees is gratefully acknowledged here.

Cuttings were planted 2×2 ft apart and plantations were ready for harvest 4—6 months after planting.

A fertilizer mixture (4:2:1) at the rate of 350 kg. per acre was applied 4 times during the year.

Irrigation was essential to ensure a good rooting of the cuttings.

Pruning was carried out when the plants were 5—7 feet high and when two generations of worms had been raised from the crop. The plants were generally pruned to 3 feet above ground and new crop were obtained 2 months after pruning carried out during the warmer months of the year.

The best mulberry crops were raised at Reduit, Curepipe and Flacq where adequate moisture favours the mulberry. In these areas, irrigation (after the crop is established) is necessary only during long spells of drought whereas in the other localities, good leaf yields are highly dependent upon irrigation.

The mulberry plant is susceptible to a powdery mildew disease (*Phyllactinia corylea*) which seems to develop mainly on the older leaves. Diseased leaves can cause physiological problems in the worms and should be avoided.

The broad-mite *Hemitarsonemus latus* and leaf-eating weevils *Cratopus* spp. were the only pests affecting mulberry. When their control was warranted (e.g. during the hot dry months). Dicofol and Mevinphos have given satisfactory results.

15.3.2 Cocoon Production.

The bivoltine races Kalimpong A (K), Nan Nung 6D (N) and their reciprocal hybrids (KN and NK) were raised throughout the year. Excellent results were achieved and these are presented in table 3.2.1.

TABLE 3.2.1—COCOON PRODUCTION AT REDUIT

Generation Period	Silk Worm Race	No. of layings used	% Egg Hatched	Percentage Loss in larvae	Yield of Cocoons		
					Kg	No. per kg	Wt. in kg/100 Layings
(Larval Life	K	5	90.7	2.4	2,696	740	53,920
11.12.72–3.1.73	N	5	95.1	7.0	2,362	840	47,240
(24 days)	KN	5	95.9	3.6	3,055	777	61,100
	NK	5	98.0	2.2	2,647	735	52,940
21.1.73–12.2.73	K	8	89.6	10.0	3,341	815	47,671
(23 days)	N	10	85.2	14	4,204	784	46,711
3.3.73–24.3.73	K	5	90.5	13	2,329	740	46,580
(23 days)	N	5	96.1	10	2,591	730	51,820
	NK	5	96.1	8	2,905	680	58,100
	KN	5	96.2	6.8	2,912	750	58,240
5.4.73–28.4.73	K	5	91.6	3	3,408	675	68,160
(24 days)	N	5	94.0	1	4,053	658	81,060
	NK	5	94.1	2	3,730	645	74,600
	KN	5	91.8	2	3,819	639	73,380
15.5.73–14.6.73	K	5	97.8	1.5	2,988	656	59,740
(30 days)	N	5	97.7	1.5	3,314	655	66,260
	NK	6	99.2	0.8	4,222	653	70,100
	KN	5	98.3	1.6	3,143	649	62,800
11.7.73–12.8.73	K	4	91.5	3.0	2,498	612	62,450
(33 days)	N	1	87.0	9.5	607	607	60,700
	NK	2	90.7	8.0	1,146	668	57,300
10.9.73–10.10.73	K	14	87.8	8.2	7,179	726	51,250
(31 days)	N	5	87.0	10.6	2,690	783	54,000
24.10.73–19.11.73	K	10	82.8	2.5	6,151	676	61,510
(27 days)	N	9	79.9	3.3	5,172	719	57,466
	NK	8	76.7	3.9	4,135	764	51,687
	KN	5	74.8	3.6	2,890	730	57,800
30.11.73–24.12.73	K	29	92.3	2.6	15,490	753	53,413
(25 days)	N	20	88.8	5.5	9,415	850	47,075
Yearly Production	K	85	—	5.13	46,080	724	54,200
	N	56	—	6.15	34,408	762	61,400
	KN	25	—	3.52	15,810	706	63,300
	NK	31	—	3.98	18,785	698	60,600

Table 3.2.1 allows to draw some conclusions:

- (i) The percentage loss in larvae is very low and is due to the absence of infectious diseases in the country. The hybrids appear to show more vigour than the pure parental stocks.
- (ii) The egg hatch is generally very satisfactory showing that the treatment to break diapause is efficient and reliable.
- (iii) The yield of cocoons is very high, both in size and weight of cocoons. The average yield of 61kg per 100 layings for the hybrids is extremely satisfactory. On a basis of 1.400 layings per year per acre of mulberry, the cocoon production can be estimated at 854 kg. per acre per year.
- (iv) The larval life extends from 24 to 33 days, depending on temperature. There would be no need to heat the rearing house in the winter period.

15.3.3 *Silk Worm Seed Production.*

As the whole sericulture process is dependent upon a regular supply of disease free seeds, much attention has been devoted to seed production.

Cocoons of the two pure races were selected for size and shape. Egg sheets were stored in a refrigerator after samples of the mothers have been inspected for absence of disease.

15.3.3.1 *Seed Production for 1973.*

<i>Race</i>	<i>No. of Cocoons Selected</i>	<i>No. of Layings Produced</i>
K	4,700	1,368
N	4,700	1,502
KN	Not applicable	487
NK	„	454

15.3.4 *Sericulture on Sub-Station.*

Small mulberry plantations were established in various districts as follows:

		<i>Acres</i>
Barkly Experiment Station (B.E.S.)	...	0.43
Curepipe Experiment Station (C.E.S.)	...	0.11
Plaisance Experiment Station	...	0.125
Pamplemousses Experiment Station	...	0.4
Flacq Demonstration Centre (F.E.D.F.D.C.)	...	0.16
Rivière des Anguilles Demonstration Centre (R.D.C.)	...	0.19
Mapou Demonstration Centre (M.D.C.)	...	0.084

The mulberry grew well in all districts but leaf yields were lower in sub-humid areas. Rearing of worms was carried out on a very small scale, but the results showed that silkworms thrive in all localities of the island.

15.3.4.1 Yield of Cocoons at the Sub-stations for 1973.

Sub-Station	No. of Layings	Yield of Cocoons (observed)		Yield per 100 Laying (Kg) (calculated)
		No.	Kg.	
Barkly ...	21	7,745	9.942	47.342
Curepipe ...	8	2,978	3.984	49.800
Plaisance ...	14	4,125	4.772	34.085
Pamplemousses ...	9	3,240	4.002	44.500
Mapou ...	5	2,201	2.522	50.440
Flacq ...	16	5,842	7.583	47.393
Rivière des Anguilles	8	3,291	4.768	59.600

Although reeling is an industrial aspect of sericulture, small experimental reeling was carried out on a locally built reeling machine to assess crudely the reelability of cocoons. Some reeling data on silk produced at Reduit are summarized in table 15.3.5.1.

15.3.5.1 Reeling of Cocoons—Reduit 1973.

Race	Length of filament per cocoon (metre)	Randitta	Total Silk % Cocoon	$\frac{SR}{ST}$
K ...	886.25	8.38	16.01	0.745
N ...	879.50	8.50	15.90	0.740
KN ...	916.75	7.99	15.98	0.783
NK ...	974.20	8.33	15.75	0.762

K=Kalimpong A

N=Nan Nung 6D

KN=Hybrid male K × Female N

NK= " " N × " K

$$\text{Renditta} = \frac{\text{Weight of Cocoon}}{\text{Weight of silk reeled}}$$

SR=Weight of silk reeled from cocoon

ST=Weight of silk in cocoon

$$\frac{SR}{ST} \times 100 = \text{reeling efficiency}$$

$$\frac{SR}{ST} = \frac{\text{Renditta} \times \text{Silk \% Cocoon}}{100}$$

15.4 Coconut Rhinoceros Beetle *Oryctes Rhinoceros* (L.).

The control of the Coconut Rhinoceros Beetle by the virus *Rhabdionvirus Oryctes* continued to progress in 1973. No viral material were released during the year and the condition of trees improved steadily in all localities.

In southern areas, damage by the beetles was more evident and could be due to the smaller number of coconut trees which are scattered around villages.

Surveys were conducted to determine the number of larvae present in breeding sites. Manure heaps were inspected for the presence of larvae and dead standing coconut trunks were felled and the wood distributed to villagers for burning. The latter operation was entrusted to the Development Works Corporation in an attempt to prevent the beetles breeding in standing trunks where application of viral material would be difficult. The result of the larval counts are presented in table 4.1.

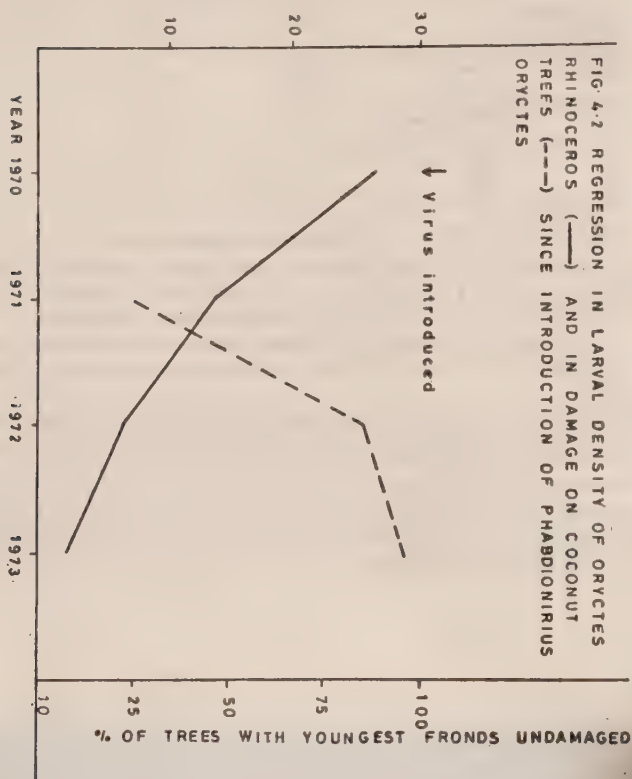
15.4.1 Larval population of *Oryctes rhinoceros* (L) in farmyard manure pits and dead coconuts trunks (January—July, 1973).

Larval site	No. of sites inspected	% of sites with larvae	No. larvae found	No. Larvae per site	No. of larvae per site	
					North	South
Manure pits ...	121	18.2	340	2.81	1.01	6.06
Trunks ...	633	20.2	3,782	5.98	Not available	
Total ...	754	19.9	4,122	5.47	—	—

Because the beetle has the ability of breeding in any sort of compost or dead palm tree, the average number of larvae per breeding site is calculated taking into account all the sites inspected. The fact that only 19.9 per cent of the potential breeding sites contained larvae can be explained by the dramatic reduction in the beetle's density brought about by the action of the virus. That the virus is indeed the cause of the decline in *Oryctes* population is clearly indicated by (i) the collection of diseased larvae (ii) the midgut hypertrophy in adults.

The reduction in the beetle's density since the introduction of virus is illustrated in figure 4.2.

NO. LARVAE PER MANURE HEAP



The reduction in the larval density is accompanied by a progressive reduction in the damage on coconut trees. The counts summarized in fig 4.2 were made on groups of coconut trees. (Isolated trees frequently display more important damages, due to the fact that they are visited by several beetles. They represent an abnormal situation and were not therefore included in the counts).

The higher density of larvae in dead coconut trunks (table 4.1) may indicate that Rhinoceros beetles prefer to develop in rotten coconut logs rather than in manure. As the beetle's density is low, there is no competition for larval food.

15.5 *Fruit Flies.*

15.5.1 Laboratory Studies—An artificial colony of the Natal fruit-fly, *Pterandrus rosa* Karsch was maintained in the laboratory to determine the optimal conditions for rearing large numbers. The flies were very successfully reared in a room naturally illuminated. The larvae were raised on a diet containing powdered maize, malt, Brewer's spent grain, sugar and water.

15.5.2 *Ecology of P. Rosa.*

Surveys were conducted, using Yellow sticky traps, to determine the seasonal abundance of the Natal Fruit-Fly. The traps consisted of a cross made by two plywood rectangles measuring 15 × 20 cm. The surfaces were coated with yellow fluorescent papers smeared with the sticky material "Formex". Four traps were hung on each of two trees and they were oriented towards the four cardinal points. Flies caught on the traps were removed, counted and sexed once per week. Traps were placed at Curepipe (on wild guava and cultivated guava), Beau Bassin (on cultivated guava) and Reduit (on peach). Counts were made from June to December.

The results showed that:

- (a) The Natal Fruit-Fly is abundant in all the three regions studied.
- (b) The population of the fly is not depressed by the winter months even in Curepipe.
- (c) Flies are most abundant on trees bearing maturing fruits, very few flies being caught on traps hanging on fruitless trees.
- (d) The density of the fly is strongly correlated with the availability of host fruits. It can therefore maintain high populations throughout the year because host fruits are continually available from month to month. Furthermore, the wild guava growing extensively on the Central Plateau is an important source of food for the flies.

15.5.3 *Insecticides Against P. Rosa.*

A combination of tetrachlowinphos (Gardona) and dichlorvos gave excellent control of *P. rosa* on mango, when applied as a fine mist with a power sprayer. Both insecticides degrade rapidly and can be applied to maturing fruits which are most susceptible to damage by the flies.

15.6 *The Banana Leaf-Roller Erionota Thrax L.*

The Banana leaf-roller was not as damaging as during the previous years. It continued to show preference for the tall Ollier—type varieties and was more prevalent in back-yard gardens than in commercial plantations.

Of the natural enemies introduced from Malaysia in 1971-72, the egg parasites *Ooencyrtus erionotae* Ferriere and *Agiommatius* sp. were again recovered. The larval parasite *Apanteles erionotae* wilbn, was recovered for the first time since introduction in 1971. Besides insects, the Minah bird also appears to play an important role in controlling the pest. The birds often split the rolls and feed on the caterpillars inside.

15.7 *Stored Product Pests*

15.7.1 *Cigarette Beetle Lasioderma Serricorne*

Phostoxin and Detia (both containing aluminium phosphide) were very successfully used to fumigate tobacco warehouses against the Cigarette beetle *Lasioderma serricorne*. The warehouses were closed for five days after placing the fumigants and were aerated for 48 hours before allowing resumption of activities.

The numbers of beetles caught on light traps declined to almost nil a few days after fumigation and remained very low for 5 months after the treatment.

15.7.2 *Used Jute Bags*

Fifty-three consignments of used jute bags for export to Madagascar were treated by the Division against stored product pests

15.8 *Visitors*

The Division received the following overseas visitors:

Dr. J. C. de M. Carvalho (Brasil), Hemipterist.

Professor T. O. Browning (Australia) Ecologist—University of South Australia —Scientific Adviser of the International Centre for Insect Physiology and Ecology (Nairobi).

Dr. G. Stride, (England)—Project Manager of the South Pacific Commissioner F.A.O. Project on the Control of the Coconut Palm Rhinoceros Beetle, based in Western Samoa.

Mr. C. Hammes (France), Entomologist O.R.S.T.O.M. Madagascar, interested in the microbial control of the Coconut Beetle *Oryctes rhinoceros*.

Dr. Rachel Galun (Israel)— Physiologist—Israel Institute for Biological Research.

Dr. G. Ercyberg (Germany)— General Manager Detia Export GMBH Germany.

Mr. G. O. H. Wassmann (Germany) Technical Delegate of Schering A.G. Plant Protection Department.

Mr. E. Bechorer (Germany)—Industrial Engineer, consultant for Pesticides markets.

XVI. Crop Experiment Stations

HEAD OF DIVISION: S. BAGUANT, AGRICULTURAL SUPERINTENDENT

16.1 The main activities of the Division consisted of the following:

- (a) The implementation of experiments carried out by the Agricultural Division, the Divisions of Entomology and Plant Pathology and the Chemistry Division.
- (b) The production of vegetable seeds, fruit trees and ornamental plants for sale to the public.
- (c) The selection of the best type of materials for propagation.
- (d) The improvement of horticulture techniques for the propagation of plants.
- (e) The production of fodder for supply to Livestock Breeding Centres of the Ministry.
- (f) The production of tobacco seed for supply to tobacco growers, and the introduction of new varieties for improvement of yield and leaf quality.
- (g) The production of tea seeds, seedlings and clones for sale to the Tea Development Authority and local tea growers.
- (h) The maintenance of Camaron ponds where breeding trials are carried out by the Fisheries Division.
- (i) The maintenance and improvement of public gardens at Pamle-mousses, Government House, Le Reduit Grounds and Port Louis Government House Grounds as well as the Central reservations of the Trunk Road. The grounds of Headquarters House, Vacoas, are also looked after by Officers of the Division.
- (j) The maintenance of Belle Vue Farm, where rice experiments are carried out by the Chinese Agricultural Mission.

CUREPIPE EXPERIMENT STATION

Development

16.2 The development works on the station are summarised as follows:

- (a) The continual removal of stores from the existing fields to provide additional land suitable for cultivation.
- (b) The pilot project for sericulture industry was started at Curepipe Experiment Station on March the 15th. By the end of December, the nine collections of cocoons had been sent to the Entomology Division at Reduit.
- (c) An additional shed was built next to one of the fish ponds to increase the duck population.
- (d) A cherry orchard of an approximate area of 1/6 Acre was created in May
- (e) A cardamon plantation has been intercropped within the pine plantation alongside the station boundary fences.
- (f) A peach orchard of about 1/7 A was established in October with sixteen grafted plants, 10 Teton de Venus, 3 Alexander's Jewel, 2 Halls' Yellow and one Babcock planted at 15 ft by 15 ft.

WEATHER CONDITIONS

16.3 Except for the months of October, November and December, the growing conditions were on the whole fairly favourable to the crops. Unfortunately the drought conditions prevailing in October, November and December had a severe and harmful effect mainly on crops such as cucumber, pumpkin and calabash planted for seed production.

16.4 The total rainfall recorded for this year was 117.75 inches whereas the mean for the last ten years is 135.99 inches. The driest month was November with only 1.13 inches and the wettest month being March with 23.70 inches. The rainfall statistics for the year 1973 are as follows:

		No. of Rainy Days		Rainfall inches	
		Year 1973	Mean 68-72	Year 1973	Mean 63-72
January ...	...	15	17.8	13.40	18.98
February...	...	23	16.4	18.20	18.51
March ...	...	17	18.2	23.70	14.76
April ...	...	21	12.8	7.42	11.14
May ...	...	16	15.0	5.71	7.60
June ...	...	22	14.6	11.00	7.64
July ...	...	21	23.4	8.61	8.56
August ...	...	23	21.4	13.64	9.98
September	...	10	11.0	6.80	4.98
October ...	...	12	11.6	1.72	6.98
November	...	8	11.6	1.13	12.95
December	...	17	12.4	6.42	13.91
		205	186.2	117.75	135.99

EXPERIMENTS

16.5 A monthly sowing of the following varieties of rice IR 665-6291, IR 532-9319, IR 532-9334, IR 665-6292, IR 63-83 and IR 532-208 to determine the climatic effect on their growth and behaviour under conditions at Curepipe was carried out

The experiment on the effectiveness of Calcium slag and basalt dust as soil amendment was continued under the direction of the horticulturist.

CROPPING PROGRAMME

16.6 Despite the drought condition prevailing during the last three months of the year, the cropping programme of the station was executed as planned:

Seed Production

16.7 The following crops were for seed production during the year and sent to Barkly Experiment Station for manipulation and sale to the public: Brede de Chine Frisée, Brede de Chine Bouquet, Cucumber, Pumpkin, Calabash, Citrouille, Luffa, Squash, Rice IR 532-208, 500 fruits of local mandarins, 135 fruits of clementine mandarine, and 96 fruits of mineole tangelo.

Foodcrop

16.8 Various vegetable such as cabbage, cauliflower, lettuce, colocasia, potato, pea, bean, sweet potatoes, miscellaneous creepers, leeks and other were grown for demonstration as to their suitability under conditions at Curepipe; the produce were sold to the public.

Fodder

16.9 760 tons of green fodder and 120 tons of silage were supplied to Livestock Breeding Station for the feeding of cattle.

LIVESTOCK

16.10 A flock of 200 Sykes Brown hens was raised for the production of eggs for vaccine production. Geese and ducks continue to be kept in association with the fresh water fish. At the end of the year, the stock on the station were: geese:12, ducks: 105, black swans: 2, and peahen:1.

Disposal of Produce

16.11 The total revenue collected in 1973 for the sale of various produce of the station amounted to Rs 22,121.75 and the items of sale included miscellaneous vegetables, duck eggs, poultry eggs and various fruits.

16.12 During the year 1973, the following organisations received fruits and vegetables freely from the station: Mauritius Red Cross, Mahebourg Christ Church, St. James Cathedral, St. Thomas Church, Candos Hospital, Sacre Coeur Church, French Embassy, Candos Welfare Association, Brown Sequard Hospital, Otter Barry Government School and Bishop's Bazaar.

PLAISANCE EXPERIMENT STATION

Development

16.13 A concrete shed of dimension 12 feet by 12 feet by 9 feet was completed in May, next to the Extension Service offices to be used for the rearing of silkworms. By the end of December, 1973, the sixth collection of cocoons was sent to the Entomology Division at Reduit.

16.14 A mango orchard of about 1.4 acres has been created, Ninety "maison rouge" mango plants have been planted at a spacing of 7 metres by 7 metres to be used as stocks for grafting next season with best varieties.

16.15 The office-cum-store building and overseer's quarters were constructed in September 1973. The handing over of the new office building took place on 28th November.

Weather Conditions

16.16 The heavy rain in the months of January, February and March had a beneficial effect on the crops especially the fruit trees. But the conditions for growth during the last four months of the year were very unfavourable. The crops most affected by the prevailing drought were the maize plantation which remained stunted, the groundnut plantation where seeds did not germinated and the coconut and citrus plantation where fruiting diminished.

16.17 The rainfall statistics for the year 1973 are as follows:

	<i>No. of rainy days</i>		<i>Inches</i>	
	<i>Year 73</i>	<i>Mean 63-72</i>	<i>Year 73</i>	<i>Mean 63-72</i>
January	21	22.3	12.35	8.48
February	24	21.1	25.70	8.28
March	23	23.2	13.12	8.27
April	18	22.0	4.74	5.73
May	19	21.1	11.96	5.71
June	24	21.7	7.14	4.40
July	21	25.5	4.86	5.40
August	27	22.7	4.96	2.80
September	20	16.4	1.21	2.50
October	19	17.2	1.57	2.38
November	11	15.2	0.45	4.29
December	18	18.9	2.07	5.55
	245	247.3	90.13	63.79

Experiments

16.18 The following crops were grown for the Plant Pathology Division and the Agricultural Division for experiments: Onion: monthly sowing, seed bed treatment, fungicide trials to control diseases; beans: variety trial, fungicide trial against leaf diseases; Ginger: fungicide trial, spacing manurial.

A. SEED PRODUCTION

16.19 In addition, a number of crops were grown in accordance with the cropping programme for seed production:

<i>Crops</i>	<i>Acrease</i>
Local peas ...	1.5 A
Bocklah ...	1.0 A
Tomato (Money Maker) ...	0.15 A
Chillies Chinese Giant ...	0.25 A
Brinjal (Rosita) ...	0.07 A
Maize ...	0.75 A
Groundnut ...	1.8 A

Coconuts and other fruits selected and sent to Barkly Experiment and Abercrombie Nursery for propagation, were as follows: Pemba Coconut =2,608, Malayan Dwarf Red Coconut =2,394, Malayan Dwarf Yellow Coconut =3,215, Malayan Dwarf Green Coconut =2,848.

Rangapur Lime =184 fruits, Florida Rough Lemon=684 fruits, Semi-neole Tangelo =125 fruits, Citron Wolmar =17 fruits, Lime St. André =79 seeds, Sugar Apple = 778 seeds, Avocado Black Round =90 seeds, Oxheart =750 grms of seed, Mango Maison Rouge=1,953 seeds, 190 luffa fruits, 23 kgs of pomme d'amour, 340 fruits of Brinjal (Farcie), 650 Kgs groundnut local cabri as well as 19 kgs of rough clean onion seeds.

Fodder

16.20 The supply of fodder from Plaisance Airport to Curepipe Livestock Breeding Station was discontinued on the 3rd of January and the maintenance of the area at the airport under fodder was subsequently also discontinued.

Disposal of Produce

16.21 The total revenue collected in 1973 for the sale of various fruits and vegetables on the Station amounted to Rs 3,044.37.

CENTRAL EXPERIMENT STATION

16.22 *Weather Conditions.*

<i>Year 1973</i>	<i>Month</i>		<i>MMS</i>	<i>Average Normal</i>
	January	...	195.50	243
	February	...	141.25	268
	March	...	319.25	297
	April	...	83.50	153
	May	...	77.50	87
	June	...	89.25	77
	July	...	60.00	72
	August	...	97.50	58
	September	...	35.75	52
	October	...	19.00	41
	November	...	4.25	74
	December	...	56.50	130
	TOTAL	...	1,179.25	1,552

16.23 The total rainfall recorded during the year (1973) amounted to 1,179.25 mm. as compared to 1,552 mm. (average normal). The highest rainfall was obtained in March with 319.25 mm. whereas only 4.25 mm. were recorded during the month of November.

Orchards

16.24 Routine maintenance of all the various orchard crops was carried out. A fair crop of avocado and citrus was obtained. About 2,209 avocado fruits and 24,000 citrus fruits were harvested and sold to staff of the Agricultural Services and to the public. The following types of citrus fruits were harvested:

Orange	...	...	15,743
Mandarin	...	...	2,366
Grapefruit	...	...	3,423
Pamplemousses	...	...	216
Tangelo	...	...	1,278
Vangasailles	...	...	888
TOTAL			23,914

Seed Production

16.25 The following crops were planted for seed production: Squash Golden, Beetroot, Cabbage, Rave Blanche, Beans Variety Long Tom, Cucumber White. In addition water melon (variety Sugar baby) and Asparagus were also planted.

Fodder

16.26 Regular maintenance of the various grass fields and collections was done. All fodder was cut and sent to the Veterinary Services for feeding animals.

Experiments

16.27 The following experiments were carried out during the year:

A. AGRICULTURAL DIVISION

- (1) Strawberry variety trial planted on 3.5.73
- (2) Peas variety trial planted on 9.5.73
- (3) Observation on newly introduced varieties of vegetables namely: carrots, table beet, cabbage, cauliflower, strawberry and garlic.

B. PLANT PATHOLOGY DIVISION

- (1) Peas seed treatment/fungicide trial against *Ascochyta* spp. planted on 23.5.1973.
- (2) Ginger seed treatment/fungicide trial for control of leaf blight, planted on 18.12.1973.

C. ENTOMOLOGY DIVISION

- (1) To assess damage of fruit flies on Cucumber, planted on 19.7.1973.
- (2) Herbe Bourique (*Stenotaphrum dimidiatum*) and Elephant grass (*Pennisetum*) grown for tests on larval breeding of *Stomoxys nigra*.

Disposal of Produce

16.28 To Veterinary Division:

72.9 tons of mixed fodder.

The following were sent to Barkly Experiment Station for seed production :

Squash, variety golden custard	...	2,287	selected fruits
Beetroot	...	10,500	kgs uncleaned seeds
Cabbage	...	23,000	kgs do
Rave Blanche	...	192,500	kgs do
Beans variety Long Tom	...	46,500	kgs do
Cucumber white	...	966	selected fruits
Peas	...	5.3	kgs (Seeds from Plant Pathology Division)

16.29 In addition 5.750 kgs of two varieties of garlic were also sent to Barkly Experiment Station for storage.

16.30 The sales of produce (fruits) during the year amounted to Rs 4,912.72.

16.31 Vegetables and fruits were given free to the following institutions on the occasion of their fun-fair and these donations amounted to Rs 148.20.

- (1) Hugh Otter Barry
- (2) Bishop's Bazaar
- (3) Red Cross
- (4) Brown Sequard Hospital
- (5) Sacre Coeur of Beau Bassin
- (6) Tamil League
- (7) Candos Hospital Welfare Association
- (8) St. James Cathedral
- (9) St. Thomas Church.

Trunk Road

16.32 The Central reservations, roundabout and verges of the Trunk Road are under the care of this Division. During the whole year routine works viz. mowing of grass, weeding, recruiting, fertilizing, and pruning and spraying against pests and diseases were carried out.

16.33 The following main changes were made:

- (i) Almost all the Bougainvilleas shrubs in the Central reservations were gradually pruned and trained as standards.
- (ii) All straggling types of Bougainvillea viz Mrs. Butt, Mrs. Wathen and Amarella in the Central reservations were being removed and gradually replaced by bushy types viz. Magenta Dwarf and Poultoni.
- (iii) All the Hibiscus were severely pruned in September, October and their centres opened.
- (iv) Almost all the Oleander were also severely pruned to reduce height and bulk.
- (v) Allamanda were pruned and trained as shrubs rather than creepers.
- (vi) All dying and dead plants of Hibiscus Red Single were removed and replaced by Bougainvillea. The remaining Hibiscus will be removed in 1974 and Bougainvillea were planted between these Hibiscus plants.
- (vii) All the Hibiscus Australian pink were being removed and gradually replaced by Allamanda. This variety of Hibiscus was shy of blooming and many plants were dying.
- (viii) Bougainvillea "Rose Claire" and Bougainvillea Mrs. Wathan were being removed to be replaced by Allamanda. Both varieties were shy of blooming.

BARKLY EXPERIMENT STATION

Weather Conditions

16.34 Total rainfall for the year amounted to 756.68 mm. compared to 972 mm. average normal. Rain was scarce as from September and in November, no rain was recorded. The groundnut and maize plantations have somewhat suffered from the drought as irrigation water was also cut down to $\frac{1}{3}$ of the normal allocation.

Experiments and Trials

- 16.35 (1) An insecticidal trial on tomato local planted on 13th November, 1972 was unsuccessful as all plants were damaged by the heavy rainfall on the 4th and 5th February.
- (2) 800 sq. ft. on tomato local were planted on 24th February, 1973 for an insecticidal trial by Entomologist—Trial was completed by 23rd July, 1973.
- (3) 26,931 sq. ft. of Peas local were planted for a fungicidal trial by Plant Pathologist on 24th May, 1973. Trial was completed by 19th September, 1973.

- (4) 3,739 sq. ft. of beans Long Tom were planted for a fungicidal trial by Plant Pathologist on 28th May, 1973. Trial was completed by 12th September, 1973.
- (5) 4,400 sq. ft. were planted with cabbages, cauliflower, broad beans, beetroot and carrot for a variety trial by Horticulturist in June and July.
- (6) 900 sq. ft. of Tomatoes local were planted by Entomologist on 23rd July 1973 for observation of fruit flies and mites.
- (7) 600 sq. ft. of cauliflower HSI-SHU was transplanted fortnightly since 15th December for observation by Horticulturists.

Development

16.36 One reservoir and one mist propagator were repaired and are now in use.

Disposal of Produce

16.37 I. *Issued Free.*

		Rs
Plants ...	...	2,501.20
Seeds ...	...	11,914.22
TOTAL	...	14,415.42

II. *Sold.*

Seeds ...	...	32,963.65
Plants ...	...	22,650.85
Bulletins	...	108.00
Field Produce	...	3,801.75
TOTAL	...	59,524.25

The letchi crop was sold for Rs 4,825.

Propagation Programme

16.38 18,049 plants of various species of fruit trees were produced, excluding 1,731 coconut seedlings.

16.39 4,296 various ornamental plants were produced during the year and most of them were sold to the public.

PAMPLEMOUSSES EXPERIMENT STATION

Weather Conditions

16.40 The weather has been rather warm and rainfall distribution has been normal compared to the past eight years except for November 1973 which has registered a rather low rainfall. Cyclone LYDIE of 10th March, 1973 caused slight damage to young crops. Climatic conditions on the whole were favourable except for the drought in the latter part of the year. The total rainfall was 50.51".

RAINFALL DISTRIBUTION 1973

January	...	...	9.58
February	...	...	6.46
March	...	...	10.03
April	...	...	2.47
May	...	...	4.92
June	...	...	3.34
July	...	...	3.30
August	...	...	2.87
September	...	...	1.48
October	...	...	1.45
November	...	...	0.81
December	...	...	3.80

Development Works

16.41 A shed for the rearing of silkworms was erected. Dimensions 12' x 12' with a small verandha 2' x 12' 10". The erection of the building was started on 26th March, 1973 and completed in June, 1973.

16.42 Coconut Palms have been regularly treated with the following pesticides: Dipterex granular, Folimat-lebaycid, Metasystox, Azodrin, Aldrin, Maneb, and M45 against Rhinoceros beetles, scale insects, red mites, mealy bugs and black ants. Besides daily hand picking of Rhinoceros beetles was carried out. Moreover circle weeding of coconut palms was done at regular intervals, cleaning of the crowns, fertilization, irrigation and harvesting. A total of 541 nuts were sent to Abercrombie Nursery.

Fresh Water Prawns

16.43 A gang of seventeen labourers and one gangman were employed since January 1973 for the maintenance of the two ponds adjacent to stag pen where Camaron breeding experiment is being done as from 13th May, 1972. The operations comprise scything of grass on banks of ponds, weeding around pond, removal of algae, stone breaking and removal, cleaning along fence. Besides one outlet was dug for Pond No. 2 and a concrete structure built. Removal of old underground waterpipe and placing of new 9" pipes on a length of 144' to provide water to both ponds.

16.44 Reconditioning of the lower part of Camaron fencing was done. Digging a new Pond No. 2 planting grass on ponds bank. Barbed wire on top of chain link fencing was erected. Maintenance of feeder canal, weeding along fence and finally help was provided for the monthly sampling, counting and measuring of prawns.

Maintenance of Feeder Canal

16.45 Repairs and cleaning of irrigation canal from "Canal de la Ville Bague" through Bassin de la Maison Blanche and Mon Rocher Sugar Estate cane fields have been carried out regularly to have an unimpeded flow of water.

Maintenance of Hedges and Roads

16.46 Trimming hedges around Experimental Station 3,670 feet long and scything grass on road 50,700 sq. ft. in area were done at regular intervals during the year. Grass edges were cut along roads.

Tobacco

16.47 Ten seed beds each measuring 4' x 25' were raised and fenced in corner of Field No. 7 for tobacco sowing. The following 2 varieties of tobacco were sown on beds treated with vapam: 3 beds under Tobacco N.C. 95, 3 beds under Tobacco S.C. 66.

16.48 The seeds germinated well and seedlings were pricked in earth balls when at four to 6 leaves stage. After a fortnight 25,410 seedlings were transplanted, spacing 3' x 2'. The granular fertilizer 12:12:17:2 was used at the rate of 100 kgs per arpent with 60 kgs single super phosphate and 40 kgs s/p per arpent. The following cultural operations were performed: Overhead and Surface Irrigation, recruiting, weeding, top dressing, earthing up, pruning, suckering, topping, control of insect pests, picking and tying leaves, loading in barns and curing.

15.49 The following chemicals were used for control of pests and diseases on tobacco: Zineb, Maneb, dithane M45, Azodrin, bibrin and lanate. 8 harvests were carried out.

Revenue collected from sale of Tobacco Leaf: From 11.7.1973—15.10.1973 1,317 kgs. of cured leaves were sold to Tobacco Warehouse for Rs 10,273.41.

Disposal of Produce

16.50 The undermentioned produce were also sold at Pamplémousses Experiment Station for 1973:

Asparagus	...	...	5.000 kgs
Bananas green	...	...	1,282 units
Bringelle Farcie	...	...	22.500 kgs
Groundnut Cabri	...	...	15.500 kgs
Lettuce mignonette	...	...	145 units
Sweet potatoes	...	...	130.000 kgs
Water melon sugar baby	...	...	990.000 kgs

ROYAL BOTANIC GARDENS

Visitors

16.51 A total of 282,142 visitors called at Royal Botanic Gardens during the year.

ABERCROMBIE NURSERY

Weather Conditions

16.52 The total rainfall for the year was 9699 mms. The distribution of rainfall over the year has not been even during the latter part of the year; a bad drought prevailed. The following table shows the distribution per month in mms.

January	...	...	1858
February	...	...	1061
March	...	...	2236
April	...	...	433
May	...	...	864
June	...	...	573
July	...	...	724
August	...	...	448
September	...	...	185
October	...	...	131
November	...	...	60
December	...	...	1126
TOTAL			9699

Development

16.53 (a) A new concrete watering pond measuring 20' × 20' × 3' has been constructed near the potting shed.

(b) A new construction near the store has been built with concrete blocks Dimensions 35' × 10' × 3'. This is to provide space to keep materials in stock to be used for potting of plants.

(c) An area of about 6,500 sq. ft. of land in front of Nursery adjoining Royal Road was cleaned, levelled and planted under ornamentals for propagation purposes.

(d) About 10 perches, of slopy land was dug, levelled and terraced to prevent soil erosion.

Cropping Programme

16.54 The *mango orchard* suffered badly from gall midge on leaves and anthracnose. Spray application of M45, Phalton, Azodrin, Benlate were carried out in order to keep control of the pests and diseases. Most of the ripe Maison Rouge harvested were kept for seed and the rest were sold to the public.

16.55 *Grapes*: Nearly all the plants were pruned in September and fertilizers applied according to programme. Sprayings of lead arsenate and Morestan were done.

16.56 The area between mango trees in various fields was planted under the following foodcrops: cassava, sweet potato, brinjal, Chinese cabbage, bitter gourd, giant chillies, mostly for production of seed.

16.57 The following plants were propagated in the nursery for sale to the public or for planting on stations: Bougainvillea (various colours), Laurier—various, Hibiscus (various), Attes, Fig, Mulberry, Pawpaw (various), Achras Sapota, Dwarf lemon, Limon Rodrigues, Vine and Vine grafts, etc. Coconuts were sown as follows: Pemba: 1,169 units, Malayan Dwarf Green: 874 units, Malayan Dwarf Yellow: 892 units, Malayan Dwarf Red: 547 units.

16.58 The total revenue collected for the year for sale of produce: fruits, vegetables, foodcrops and plants amount to Rs 11,220.57.

16.59 The sales at Abercrombie Nursery were as follows: Plants: 19,707 units, Water Melon: 13,090 kgs, Mangoes: 425 units, Letchi: 1,300 units, Sweet Potato: 1,802½ kgs, Manioc: 616 kgs, Bananas: 1,282 units, Brinjal: 28 kgs, Groundnut: 1½ kgs, Lettuces: 145 units, Asparagus: 4½ kgs, Fresh water fish: 14 kgs, Ginger: 17½ kgs, Turmeric: 32 kgs.

RICHELIEU EXPERIMENT STATION

Development

16.60 Development work consisted of destoning of fields in B I, III and IV with Broomwade Equipment. Floor of Air-curing shed was cast in concrete. An absorption pit was made. The construction of a cow byre to house 500 head of cattle was started at the end of the year.

WEATHER CONDITIONS

<i>Months</i>		<i>Mean Maximum Temperature °F</i>	<i>Mean Minimum Temperature °F</i>	<i>Rainfall mms</i>
January ...	...	87.2	78.0	135.9
February	...	86.5	78.0	115.9
March ...	...	86.2	76.5	184.5
April ...	...	84.0	74.3	29.0
May ...	...	83.3	74.1	108.3
June ...	...	75.6	67.9	26.6
July ...	...	75.6	67.1	18.8
August ...	...	75.2	67.5	13.5
September	...	77.4	68.4	—
October ...	...	81.9	71.2	—
November	...	83.9	70.5	—
December	...	86.7	73.5	53.3

CROPPING PROGRAMME

(a) *Tobacco*

16.61 The first planting consisted of 4.9 acres of flue-cured and 1.5 acres of air-cured varieties. The second season consisted of 4.3 acres of flue-cured and 1.5 acres of air-cured varieties. One gallon of gas oil was used to produce 4.3 kgs of cured leaf. The average price per kg of cured leaf was Rs 5.83 which is on the low side.

(b) *Foodcrops*

16.62 7 acres of local maize were planted. Seed from selected cobs were shelled and sent to Barkly Experiment Station.

16.63 Other food crops grown for seed or planting material were: groundnuts (variety cabri), Cassava (variety Westor), Sweet Potatoes (varieties SM 1, SM 2, SM 3, and SM 4).

ORCHARDS

16.64 Routine maintenance of all orchards was carried out. A grape orchard was planted with about 298 grafted plants received from Abercrombie Nursery for experiments next year on methods of training and fertilizer requirements.

EXPERIMENTS

16.65 The following experiments were carried out on the station under the direction of the Agricultural Division: Tobacco: 2 Variety trials on flue cured tobacco (N.C. 95, S.C. 66, KUT E 1 CE 2, Y.M.), 2 Fertilizer trials on flue-cured tobacco (S.C. 66), Cotton: one variety trial; Castor: one variety trial; Soyabean: Seed multiplication of 12 varieties; Pomme d'Amour: 2 fertilizer trials using foliar sprays; One soil amendment trial on maize; One soil amendment trial on Beans variety Pioneer; One soil amendment trial on Groundnut variety Cabri; one experiment to determine the yield of 2 varieties of maize (Protina and Opaque 2), Experiment to determine yield of cauliflower variety Shi-Shu (Summer Variety).

DISPOSAL OF PRODUCE

16.66 The total value of the produce sold from the station amounted to Rs 54,646.45 of which canes for Rs 29,598.02 and tobacco for Rs 25,048.43.

16.67 Produce sent (a) to *Barkly Experiment Station*, were as follows: 5,390 kgs of Groundnut Cabri, 1,505 kgs of Pomme d'Amour local, 138 maison rouge seeds, 148 Baissac seeds, 480 cashew nuts, 1,200 Watermelon Sugar Baby fruits, 3 kgs watermelon sugar baby seeds, 251 kgs Cotomili (Morocco) seeds, 8,425 kgs Soya bean seeds, 211 kgs Soya bean 64/91, 1148.4 kgs Tomato marglobe, 2,311 kgs Bean (Victory), 100 kgs Bean (L. Red), 483 kgs Bean (L. Tom), 428 kgs Bean (Pioneer), 72.5 kgs Brede de Chine Bouquet seeds, 174 Squash Golden fruits, 2.8 kgs Maize Opaque 2, 18 kgs Maize Protina (India).

(c) to *Livestock Feed Factory*: 4,670 kgs Maize local and 1,130 kgs Sorghum.

(c) *Given free of charge*: 12.4 kgs of seeds (N.C. 95, Bonanza, Y. Mammoth) to Tobacco Warehouse, 4½ kgs Amarello seeds, 5 units watermelon Sugar Baby fruits to Parent Teachers' Association, 5 units watermelon Sugar Baby fruits to Hugh Otter Barry Government School, 5 kgs Pomme d'Amour to Fancy Fair, 12 kgs Manioc to Fancy Fair, 20 kgs Sweet Potato to Fancy Fair.

VISITS

16.68 Visitors to the station included students of the University of Mauritius and students from Ecole d'Agriculture de l'Ile de la Réunion.

NOUVELLE DÉCOUVERTE RICE PROJECT

Development

16.69 Since the station is situated in the superhumid zone, the construction of drains has been given priority in the development of the station almost throughout the whole year. Terracing was also carried out where this was found necessary. A tractor shed was built in March/April.

WEATHER CONDITIONS

16.70 A table showing the monthly rainfalls recorded at the station and the corresponding normal rainfalls is given below:—

<i>Month</i>	<i>Rainfall Recorded</i> <i>mm</i>	<i>Normal Rainfall</i> <i>(Ripailles)</i> <i>mm</i>
January	... 456	335
February	... 384	387
March	... 313	484
April ...	... 112	269
May ...	... 197	243
June ...	... 241	170
July ...	... 183	177
August	... 299	136
September	... 105	148
October	... 45	53
November	... 28	81
December	... 222	225
TOTAL ...	2,595	2,708

October and November were the driest months of the year. Drought conditions existed in November and crops started to show signs of water stress towards the end of the month as there are no irrigation facilities at the station.

CROPPING PROGRAMME

16.71 The station serves the purpose of carrying out experiments mainly on upland rice which can be grown at Nouvelle Decouverte between December and May. During the remaining part of the year or when there is land available other crops are cultivated. The following crops were grown in the year 1973:

RICE

16.72 Maintenance was carried out in 1 acre of rice variety IR 532-208 planted in October 1972 and in 6 acres of rice variety TN₁ planted in December 1972. Rats and birds are two serious pests at Nouvelle Découverte. Much labour had to be used for bird-scaring just after planting and after panicle formation. Variety IR 532-208 was harvested on 21st February 1973 and variety TN₁ harvested on 3rd April, 1973. Yields for both varieties were extremely low due to erratic weather conditions and heavy attack of Brown Spots (*Helminthosporium* sp.) during flowering.

TEA EXPERIMENT STATION

Weather Conditions

16.73 The two cyclones, namely Charlotte which passed 100 miles of the coast of Mauritius on 8th to 9th of January and cyclone Lydie which passed 310 miles off Mauritius on the 8th of March, apart from the beneficial rain they brought did not affect the plantations.

16.74 Total annual rainfall was below normal by 52.08 inches, this was due mainly to the dry weather which prevailed during the last part of the year and also for January and February which were relatively dry.

16.75 Throughout the year, the average monthly maximum temperature was very slightly above the normal except for May and June whereas the average monthly minimum temperature for the first half of the year was quite below normal and for the next half it was above the normal.

CROP

16.76 Green tea leaf harvested during the year amounted to 440,788 half kgs. as compared to 412.99 half-kgs. for last year.

16.77 Monthly yield (half kgs.) and percentage of the total crop for 1973 are given below:

<i>Month</i>		<i>Yield</i>	<i>% of total</i>
January	...	73,056	16.58
February	...	54,520	12.37
March	...	71,808	16.29
April	...	57,802	13.11
May	...	27,988	6.34
June	...	11,766	2.66
July	...	3,758	0.85
August	...	4,924	1.09
September	...	7,390	2.17
October	...	41,782	9.47
November	...	36,226	8.22
December	...	47,866	10.85
TOTAL		440,788	

16.78 The 3-year pruning cycle opted for last year has been followed; viz: i.e. 1st year—pruned $\frac{1}{2}$ inch above previous pruning mark and tipped 8 inches above; 2nd year—unpruned and plucked level flat; 3rd year—deep skiffed at 4 inches above pruning mark and plucked at 4 inches above.

16.79 Chemical fertilizer in the ratio of 25:5:5 was applied in all the fields. The amount for each field being calculated according to the yield of made tea i.e. 1 kg. of Nitrogen for every 10 kg. of made tea. Split application of the fertilizer was carried out in October and January.

SEED GARDENS

16.80 The quantity of tea seeds collected during the year amounted to 37,434 half kgs from which 23,076 kgs of sinkers were obtained. Total yield ($\frac{1}{2}$ kgs) of the different tea seed gardens are given below for 1972 and 1973.

Seed Garden	1972	1973
Derauville ...	19,339	13,395
Parc aux Cerfs ...	4,182	7,293
Midlands ...	3,124	4,800
Curepipe Experiment Station ...	456	513
Wooton ...	43	255
Salazie ...	8,125	7,060
Nouvelle Découverte ...	6,953	2,635
Central Experiment Station ...	600	1,483
TOTAL ...	42,822	37,434

16.81 Fertilizer mixture in the ratio of 3:1:1 was applied in all seed garden at the rate of $1\frac{1}{2}$ kg of mixture per plant.

VEGETATION PROPAGATION

16.82 The field of nucleuse clone 1H has been pruned in May at an average height of 23 inches and fertilized with Sulphate of Ammonia at rate of 36 kg N/acre. Leaf cutting were taken in January, February, March and December on a total of 51,919 cuttings were potted in plastic sleeves.

16.83 Disposal of Produce:

Produce	Sold to	Quantity kgs	Rate Rs cs	Amount Rs cs
1. Tea Leaf	Dubreuil Tea Factory	127,567 $\frac{1}{2}$	0.29	36,997.04
	Dubreuil Tea Factory	169,364 $\frac{1}{2}$	0.28 $\frac{1}{2}$	48,268.74
	Dubreuil Tea Factory	18,072 $\frac{1}{2}$	0.27 $\frac{1}{2}$	4,969.80
	Dubreuil Tea Factory	109,174	0.28	29,562.16
	Chartreuse Tea Factory	16,702	0.28	4,676.56
		440,788		124,474.30
2. Tea Seeds	Tea Development Authority	16,998 $\frac{1}{2}$	1.00	16,988.00
	Mon Desert Alma	700	4.50	3,150.00
	Planter	48	4.50	216.00
		17,746$\frac{1}{2}$		20,364.00
3. Clonal Plants	Planters	1,000	0.12	120.00
	Royal Botanic Gardens	950	Free of Charge	

XVII. Livestock Breeding Stations

HEAD OF DIVISION: J. J. A. FERRIERE, AGRICULTURAL SUPERINTENDENT

17.1 The Livestock Breeding Stations include stations at Curepipe and Palmar and the Poultry Breeding Centre at Reduit.

MILCH BREED

17.2 At the end of the year, the two Livestock Breeding Stations carried a total of 344 head of milch cattle of all ages. Of these, there were 271 females and 73 males. There were 101 calvings during the year—50 males and 51 females. The average weight of heifer calves was 28.4 kgs and that of bull calves 29.2 kgs. The average weight at weaning was 80 kgs at 90 days.

At Curepipe Livestock Breeding Station, over a lactation period of 305 days, first calvers yielded 5.6 kg of milk per head per diem, the best performer yielded 7.1 kgs with a peak of 13.6 kg; second calvers yielded 6.1 kgs of milk per head per diem, the best performer yielded 8.0 kgs with a peak of 14.4 kg; third calvers yielded 6.9 kgs of milk per head per diem, the best performer yielded 9.3 kgs with a peak of 12.3 kgs. Over 305 days, cows with more than three calvings gave 5.8 kgs of milk per head per diem.

During the year eleven bulls and ten cows were sold for slaughter. Within the Rural Development Programme 24 bulls and 26 cows were made available to the Ministry of Economic Planning and Development for distribution to cowkeepers

HERD CATTLE

17.3 There were at Palmar LBS at the end of the year 115 head of Ongole, 107 head of Boran and 96 head of Zebu crossbreds. There were 99 calvings out of which 34 were from Ongole, 33 from Boran and 32 from Zebu cross breeds.

The average weight at birth and weaning for the different breeds were as follows:

		Av. Birth-weight (kgs)		Av. weaning wt. (kgs)
		Males	Females	Males and Females
Ongole	...	24.6	22.1	108.6
Boran	...	25.9	24.4	115.0
Zebu	...	27.1	22.5	97.3

During the year, 52 head of herd cattle were sold, most of which were for draught purposes.

GOATS

17.4 At the end of the year there was a total of 207 goats at Palmar LBS. These were classified as follows: 137 Anglo-Nubians, 64 Jumna Paris, 1 British Alpine and 5 Rodrigues.

93 births were recorded in respect of the Anglo-Nubian; of these, 55 were males and 38 females. The average birth weight was 2.9 kgs and the weaning weight was 17.0 kgs. The average number born per kidding was 1.2.

39 births were recorded of the Jumna Pari breed, out of these 19 were males and 20 females. The average birth weight was 3.0 kgs and the weaning weight was 17.2 kgs. The average number born per kidding was 1.5.

During the year 4 bucks and 2 does were sold and 35 bucks and 16 does were made available to farmers for breeding.

PIGS

17.5 The construction of a second pig unit was started in July 1973 and was not yet completed at the end of the year.

At the end of the year the total number of pigs at the two Livestock Breeding stations was 262. 75 litters were farrowed with an average of 8.6 piglets per litter. The average birth weight of the piglets was 2.2 lbs and the average weight at weaning was 26.6 lbs.

A total of 296 pigs were sold during the year to the Ministry of Co-operatives and Co-operative Development and to some pig breeders.

SHEEP

17.6 At the end of the year, there were 18 head of Polled Dorset sheep and 30 heads of Corriedale sheep of all ages. The number of births registered were 4 males from the Polled Dorset breed; 6 males and 3 females from the Corriedale breed. Two rams were sold for slaughter.

RABBITS

17.7 At the end of the year the Curepipe and Palmar Livestock Breeding stations carried a total of 218 head of rabbit.

More hutches were constructed during the year and the breeding stock was increased. A total of 187 weaners and 4 adults were sold to breeders.

POULTRY BREEDING CENTRE

17.8 The Poultry Breeding Centre maintained parent stock of Sykes Brown and Sykes Tinted from F & G. Sykes for the production of layers. In addition the centre maintained Ross' Broiler parent stock for the production of broiler chicks.

During the year the Poultry Breeding Centre hatched 120,984 chicks. 51,549 day-old pullets, 5,229 month-old pullets and 118 point of lay pullets for the production of eggs were sold to Poultry Keepers. To help the production of poultry meat 4,707 day-old broilers, 57,296 day-old and month-old male chicks from laying stock were sold. 2,741.590 kgs of dressed chickens and culls, and 671.550 kgs live culls were sold for table. The centre also provided 58 chickens to the Animal Health Laboratory for the testing of vaccine and 520 point of lay pullets to Curepipe Experimental Station, Richelieu Experimental Station and the Extension Service.

HYBRID SYKES BROWN

17.9 A total of 73,221 hybrid Sykes Brown chicks were produced of which 32,763 day-old pullets, 3,054 month-old pullets, 36,107 day-old cockrels and 200 month-old cockrels were sold for eggs and poultry meat production respectively.

HYBRID SYKES TINTED

17.10 A total of 43,206 hybride Sykes Tinted chicks were produced of which 18,786 day-old pullets, 2,175 month-old pullets, 20,975 day-old cockrels and 14 month old cockrels were sold.

BROILER CHICKS

17.11 A total of 4,557 day-old broiler chicks were produced, 221 chicks carried forward from year 1972, 4,707 were supplied to small poultry keepers.

EGG PRODUCTION

17.12 During the year 256,059 eggs were produced at the Poultry Breeding Centre. The monthly production of the various breeds maintained during the year was as per annexure A.

Out of the 256,059 eggs produced, 3,029 eggs carried forward from the year 1972; 72,782 were sold for table, 169,341 eggs were incubated for the supply of chicks to the public, 6,352 eggs were issued to the Animal Health Laboratory for vaccine production, 2,430 eggs to the Artificial Insemination Laboratory and 24 eggs to the Central Laboratory, Ministry of Health. The stock in hand at 31st December 1973 was 2,375 eggs.

REPRODUCTIVE PERFORMANCE

17.13 During the year under review 120,984 chicks were hatched. The average fertility and hatchability were 84.6 per cent and 71.6 per cent respectively of all eggs set.

The monthly reproductive performance of all breeders were as per annexure B.

The monthly reproductive performance of all parent stock breedwise was as per annexure C.

IMPORT OF STOCK

17.14 To meet the demand of layers the following were imported from United Kingdom.

(i) Sykes Brown Parent Stock chicks: 1,264

(ii) Sykes Tinted Parent Stock chicks: 513

For the production of broiler chicks, 206 day-old Ross parent stock pullets and 34 day-old cockrels were imported.

ANIMAL HEALTH (MORTALITY)

17.15 The Poultry Breeding Centre carried an average of 13,292 birds of all ages on a monthly basis. The mortality in adult stock during the year was 5.9 per cent and in the group 0-12 weeks the mortality was 12.2 per cent.

Annexure A

17.16 Record of Monthly Egg Production for Year 1973

<i>Month Breed</i>		<i>P. S. Sy. Brown</i>	<i>P. S. Sy. Tinted</i>	<i>P. S. Ross Broiler</i>	<i>Mixed Hybrid</i>	<i>Total</i>
January 73	...	11,099	7,441	1,364	4,088	23,992
February	...	14,115	8,744	1,012	3,450	27,321
March ...	...	12,654	8,540	368	2,755	24,317
April ..	...	14,743	9,143	—	2,723	26,609
May ...	...	15,859	10,011	—	2,485	28,355
June ...	..	15,669	9,245	46	1,966	26,926
July ...	...	11,884	6,935	981	1,625	21,425
August ...	...	10,281	6,617	1,572	1,907	20,377
September	...	8,194	5,888	625	1,859	16,566
October	...	7,723	5,329	587	2,091	15,730
November	...	5,093	4,069	1,150	1,668	11,980
December	...	6,220	3,767	857	1,617	12,461
TOTAL	...	133,534	85,729	8,562	28,234	256,059

Annexure B

17.17 Monthly Reproductive Performance for Year 1973

<i>Month</i>		<i>No. of egg set</i>	<i>No of fertile</i>	<i>No of chick hatched</i>	<i>% Fertility</i>	<i>% hatched of Fertile</i>	<i>% hatched of all egg set</i>
January	...	564	518	426	91.84	82.23	7.53
February	...	4,934	3,958	3,249	80.21	82.08	65.84
March	...	20,344	16,234	12,561	79.79	77.37	61.74
April	...	17,237	13,941	11,792	80.87	84.58	68.41
May ...	...	25,650	21,172	17,952	82.54	84.59	69.98
June ...	...	21,402	18,078	15,087	84.46	83.45	70.49
July ...	...	25,063	21,609	18,790	86.21	86.95	74.97
August	...	15,219	13,649	12,213	84.68	89.47	80.24
September	...	15,508	13,740	12,171	88.59	88.58	78.48
October ...	...	14,813	13,049	10,959	88.09	83.98	73.98
November	...	7,201	6,123	5,067	85.02	82.75	70.36
December	...	495*	—	—	—	—	—
		911	807	717	88.58	88.84	78.70
TOTAL	...	169,341	142,878	120,984	84.62	84.68	71.65

* 495 eggs set in December 1973 but chicks came out in 1974.

% for the month of December has been calculated on 911 ggs set.

Annexure C

17.18 The Monthly Performance of all Parent Stock Breedwise for Year 1973.

Month	Breed—Ross Broiler					Breed—P. S. Sykes Brown					Breed—P. S. Sykes Tinted					
	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile	
January	...	564	518	426	91.48	82.23	—	2,441	1,958	1,636	80.21	83.55	1,351	976	797	81.65
February	...	1,142	1,024	816	89.66	79.68	2,441	11,903	9,729	7,727	81.73	79.42	7,555	5,749	4,258	74.06
March	...	886	756	576	85.32	76.19	11,903	10,424	8,596	7,434	82.46	86.48	6,775	5,313	4,335	81.59
April	...	38	32	23	84.21	71.87	10,424	15,911	13,522	11,450	84.98	84.67	7,739	7,650	6,502	84.99
May	...	—	—	—	—	—	15,911	13,080	11,248	9,514	85.99	84.58	8,322	6,830	5,573	81.59
June	...	—	—	—	—	—	13,080	16,211	14,090	12,189	86.91	86.50	8,852	7,519	6,601	87.79
July	...	—	—	—	—	—	16,211	9,071	8,264	7,397	91.10	89.50	5,764	5,039	4,526	89.81
August	...	384	346	290	90.10	83.81	9,071	8,661	7,838	7,003	90.49	89.34	5,584	4,745	4,224	89.02
September	...	1,263	1,157	944	91.60	81.59	8,661	8,344	7,546	6,388	80.43	84.65	6,083	5,144	4,290	83.39
October	...	386	359	281	93.	78.27	8,344	3,395	2,981	2,483	87.80	83.29	3,194	2,594	2,100	80.95
November	...	612	548	484	89.54	88.32	3,395	—	—	—	—	—	—	—	—	—
December	...	495*	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	...	911	807	717	88.58	88.84	—	—	—	—	—	—	—	—	—	—
TOTAL	...	6,681	5,547	4,557	89.67	82.15	99,441	85,772	73,221	86.25	85.36	63,219	51,559	43,206	81.55	83.79

*Set in December 73 but chicks came out in January 74

XVIII. Division of Extension Services

HEAD OF DIVISION: L. R. BRUNET, DIVISIONAL SCIENTIFIC OFFICER

Contract with Farmers

18.1 The central objective of the Extension Division is to provide assistance to planters and farmers in order to increase their production efficiency and income through the adoption of improved methods and techniques so as to raise their standard of living.

18.2 The Division provides a mass media information service which is supplemented at the level of Districts by field visits at the farmers' fields, the laying down of field demonstrations and work with farmers in groups so as to motivate the adoption of progressive changes.

Field Visits

18.3 Visits to crop plantations increased considerably to over 15,500 in 1973. Moreover 1,000 visits were paid to livestock breeders. Advice was tendered on various aspects of cultivation of crops and of animal husbandry. Greater efforts were made on crops of economic importance viz: sugarcane, potato, maize, groundnut, onion, rice, tomato, tea as well as classes of small livestock like poultry and rabbit. Emphasis was laid on such critical practices like rational fertilization, recruiting weed control, cropping cycle and harvesting at maturity for sugarcane; spacing, varieties, pest and disease control for groundnut; fertilization, pest and diseases control for potato pruning and fertilization for tea; varieties and fertilization for rice; pest and disease control for tomato; pest and disease control and fertilization for onion; spacing and adoption of hybrids for maize; housing for rabbits.

Group Meeting

18.4 135 group meetings related to crop production were held on evenings and were attended by over 2,700 planters; similarly 46 meetings on livestock production were held and were attended by over 1,000 breeders. The topics dealt with were cultivation of major crops viz sugarcane, onion, groundnut, potato, maize, rice, tea, tomato with emphasis on practices of extension priority. One meeting was held with flower cultivators and a few on pesticide usage. Meetings with livestock breeders dwelt mainly on cow management, rabbit and poultry breeding.

Conducted Tours

18.5 17 tours were organized and over 200 planters were taken on visit to sites of agricultural interest. The sugarcane planters visited the cane nursery at Pointe aux Sables for 'observations on newer varieties, and fertilizer demonstration plots. The foodcrop growers visited localities where improved farming practices have been adopted as well as demonstration plots.

Use of Mass Media

18.6 A series of 13 talks mainly in various aspects of livestock husbandry were presented by the staff of the Extension Service on the radio. The staff participated in the programming and preparation of another series of 13 talks delivered on the Television. Moreover the Television and Radio were regularly made use of to inform and invite planters to meetings organized by the Extension Staff.

Field Demonstrations

18.7 The programme of demonstration on the rational use of fertilizers were consolidated into a special project intended to last for three consecutive years. Major crops namely sugarcane, potato, groundnut, tea, rice, onion and maize were the subject of the project. Altogether 78 fertilized demonstrations mainly on sugarcane were laid out during the year on planters' fields. Besides five demonstrations were made on chemical weed control in sugarcane lands, 45 on chemical control of pests and diseases on major crops and nine other demonstrations on the optimum spacings for maize and groundnut.

Publications

18.8 The Farming News was published regularly every month, providing a timely coverage of relevant farming practices which required emphasis. Each issue was printed in 1,600 copies and were distributed to the farming community.

18.9 The A.Y.C. Bulletin, a bi-monthly publication for Agricultural Youth Clubs continue to be printed to cater for the needs of the rapidly expanding agricultural youth movement. Four issues of the publication were produced during the year, each having been turned out in 500 copies.

18.10 About 6,000 advisory leaflets on sugarcane, maize, groundnut, rice, onion, garlic, potato, fruit trees, poultry were printed and distributed as and when required.

18.11 About 2,000 handouts, in support of lectures given during the Agricultural Training Course, were distributed to participants.

18.12 However, booklets on Pest Control, Disease Control and Rabbit raising were issued to farmers.

District Demonstration Centres

18.13 The four District Demonstration Centres continued to serve as bases for agricultural extension activities in their respective regions.

18.14 Sugarcane varieties M438/59 and M124/59 were maintained at each centre for demonstration purposes and for distribution of planting materials to planters. New demonstrations laid out were on SM sweet potato varieties, varieties of groundnut, asparagus, water melon varieties and maize hybrides. Onion, ginger and potato were also grown in comparative demonstration. Other crops were grown in different seasons to demonstrate good management practices.

18.15 A unit of several classes of livestock e.g. rabbits, goats, poultry and cattle were maintained at all centres.

18.16 Silkworm rearing from mulberry plantations on the centres, continued on Demonstration Centres.

18.17 The centres provided sources of planting materials to planters. Request for cuttings of new cane varieties, suckers of pine apple and banana, sweet potato vines, manioc sticks, seed of accacia, vegetable seeds, fruit plants were all catered for.

18.18 For the first time sales of animal feeds were effected on the centres in an attempt to alleviate the feed problem of small scale livestock breeders.

18.19 A few crosses of Jumna Pari and Anglo Nubian goat breeds were produced on the stations and were sold to the public for improvement of the local stock. Moreover about 100 goat services were effected on the centres for the benefit of goat breeders.

18.20 Rice seeds were sold at all centres in view of promoting rice cultivation.

18.21 The Centres served as venue and training ground during the Agricultural Training Course organised for members of youth organisations.

18.22 The Demonstration Centres as well as Extension offices, whose number rose to 7, were kept open on 3 afternoons per week to receive visits and entertain requests for advice from planters.

Demonstration Centre, Mapou

18.23 About 1,218 kgs of foodstuffs and 1,986 eggs were produced. 1,750 sugarcane cuttings, 37 goats, 28 hens, 60 kilos of seeds and about 7 tons of livestock feeds were sold on the station. Total sales amounted to Rs 7,766.

Demonstration Centre, Rivière des Anguilles

18.24 About 2,962 kgs. of foodstuffs, 1,052 litres of milk and 1,193 eggs were produced. 25,400 sugarcane cuttings, 87 fruit plants, 172 kgs. of seeds, over 27 tons of livestock feeds and 10 goats were sold. Total sales amounted to Rs 15,787.

Demonstration Centre, Central Flacq

18.25 About 3,974 kgs. of foodstuffs and 1,158 eggs were produced. 7,875 sugarcane cuttings, 18 goats, 5,412 kgs. of seeds, over 20 tons of livestock feeds, 162 fruit plants were sold. Total sales amounted to Rs 16,111.

Demonstration Centre, Plaisance

18.26 About 1,520 kgs. of foodstuffs, 1,288 litres of milk and 2,724 eggs. were produced. 61,900 sugarcane cuttings, 3 goats, 188 kgs. of seeds and over 14 tons of livestock feeds were sold. Total sales amounted to Rs 13,523.

Propagation and Distribution of sugarcane varieties

18.27 The intensive effort for removal of gummosis susceptible cane varieties and their replacement by resistant ones continued throughout the year. Varieties recommended for such purposes were M13/56; S17; M351/57; M438/59 and M 124/59.

18.28 Some 97,000 sugarcane cuttings comprising mainly of variety M124/59 and M438/59 were sold from the Demonstration Centres.

18.29 Moreover transport was provided for the supply of about 7 tons of variety M124/59 from Pointe aux Sables Cane Nursery for the benefit of planters in the uplands.

18.30 In general planters were referred to Sugar Planters Rehabilitation Fund Cane Nursery at Pointe aux Sables for provision of disease free planting materials of recommended varieties.

Assistance to Farmers

18.31 The drain construction at the foot of Corps de Garde Mountain has been completed. 56 soil samples were taken from fields of small planters, analysis and fertilizer recommendation were made accordingly. 66 goats of improved breeds (Anglo Nubian and Jhumna Pari) were sold to breeders.

Foodcrops

18.32 Cultivation of foodcrops in sugarcane interlines registered a sensible increase in 1973. The effective acreage under foodcrops was estimated at 8,858 arpents, out of which, 1,617 arpents of pure stand equivalents were inter-cultivated in sugarcane lands.

18.33 The main crops in sugarcane interlines were the following with their respective gross acreages:

Potato	...	...	2,168 arpents
Groundnut	...	...	514 arpents
Bean	...	...	261 arpents
Tomato	...	...	178 arpents

Creepers, peas and maize were other crops grown on significant acreages.

18.34 Potato was grown over 1,409 arpents of pure stand equivalents, comprising of 999 arpents in sugarcane interlines. The total production was estimated at 10,069 metric tons and the average yield per arpent rose to 7.1 metric tons.

18.35 The acreage under groundnut rose to 1,090 arpents of pure stand equivalents, out of which 205 arpents were cropped in sugarcane interlines. The total production was estimated at 1,984 metric tons and the average yield per arpent at 1,820 kgs.

PESTS AND DISEASES

Sugarcane

18.36 No outbreak of the Gumming Disease has been observed. With the replacement of gummosis susceptible varieties by resistant ones, incidence of this disease has become rare.

18.37 Attacks of Pink and Spotted borers have been observed in varying degrees particularly in the uplands on certain varieties.

Potato

18.38 At the beginning of the potato season marked germination failure was observed in certain plantations caused by a seed borne fungal disease. Bacterial wilt caused as usual sensible damage to potato plantations. Tuber moth incidence was also observed. Blight attacks occurred mostly in the uplands but resulting damage was not serious in general. Consequently potato yield per arpent increased considerably.

Groundnut

18.39 Leaf spot disease and leaf tier insects attacks continued to be the major setbacks to this crop; however, their damage was greatly reduced by increased adoption of chemical measures.

Onion and Garlic

18.40 Pink root rot, blight and purple blotch continued to affect these crops causing marked yield reduction. Thrips damage was conspicuous in certain plantations where chemical control was neglected.

Tomato

18.41 Leaf blight and bacterial wilt were the main diseases on this crop. Nematodes, mites, fruit borers were the major pests observed.

Maize

18.42 Rust and cob borers attacks were conspicuous on hybrid maize in particular.

Natal Fruit Fly

18.43 This pest still poses the biggest problem on fruit trees.

18.44 A gradual disappearance of symptoms from Rhinoceros Beetles was evident on coconut trees and attacks of banana leaf roller insects were slight as the worms were apparently kept under control by their predators.

Work with Youth

18.45 During 1973 although 2 clubs discontinued their activities, a large number of new clubs were formed. Moreover this youth movement was extended to Rodrigues island. The total number of clubs in operations at the end of the year was 74, of which 4 were in Rodrigues island. To cope with such expansion one new federation was formed.

18.46 The A.Y.C. Bulletin continued to be published for the benefit of members of Agricultural Youth Clubs.

18.47 The main activities during the year comprised the formation of new clubs training of club leaders, imparting agricultural education, conduct of agricultural competitions which were supplemented by other activities like Essay Competitions and a football tournament. Altogether 364 meetings were held by officers of the Division and were attended by about 4,000 club members. 36 field tours were conducted to places of agricultural interest and were attended by over 700 members. A field day and an exhibition was organised in Moka/Flacq following a Kitchen Gardening and a Rabbit Competition.

18.48 Five Leadership Training Courses were held and were attended by 387 club delegates. Two Kitchen Garden Competitions were run and prizes and certificates were awarded to winners. With the help of Mr. H. Attfield, Peace Corps Volunteer, rabbit raising received greater attention in the clubs. Two Rabbit Project Competitions were held and winners were awarded prizes and certificates.

18.49 As in previous years an Agricultural Training Course of $2\frac{1}{2}$ months duration was held on Saturday mornings at 4 centres namely Réduit, Rivière des Anguilles, Flacq and Mapou. It was attended by over 50 members sponsored by their respective youth organisations.

Miscellaneous Activities

18.50 Upon request, a large number of visits were paid to schools and Poor Institutions by the officers of the Service. Advice was given accordingly as well as assistance in the way of seeds, fertilizers, pesticides and fruit plants.

18.51 London College was assisted in setting up its School Farm at Petit Verger. A course of 30 lectures in elementary agriculture was prepared and was delivered to its students on Saturday mornings. Necessary practical works were also included in the programme.

18.52 Upon request from the Economic Planning Unit, the Agronomist and Dr. N. Bakkar participated as lecturers in the training programme of the Village Development Officers. Six lectures on agriculture and animal husbandry were delivered.

Liaison with Agricultural Research Organisations

18.53 Close liaison continued to be maintained with research institutions/divisions in relation to field problems and latest findings. In this connection the following talks were attended by officers of the Division:

<i>Date</i>	<i>Subjects</i>
12th June ...	Revue des Travaux du MSIRI en 1972
21st August ...	Multiplication de cannes en pre-homologation
18th September ...	La Fertilization de la canne à sucre
9th October ...	Bilan des travaux accomplis au MSIRI sur la diversification agricole en terres de canne à sucre ces cinq dernières années
8th November ...	Exposé sur les chargements et la coupe mécanique de cannes
20th November ...	Efforts to control the sugarcane scale insect biologically
18th December ...	Regard sur les variétés de canne à sucre en fonction des plantations de 1974.

18.54 Upon invitation Dr. K. Hassal, Lecturer, University of Reading, delivered a talk on "Pesticides" to the Extension Officers.

18.55 Moreover the staff attended two demonstrations on mechanical harvesting and loading of canes; and two field tours were organized with research workers for discussion on chemical weed control and foodcrops agronomy.

Surveys

18.56 Various surveys were conducted during the year as follows:

- (i) Weekly recording of Market Prices for vegetables
- (ii) Assessment of herbicide damage to foodcrops
- (iii) Assessment of Foodcrop production
- (iv) Survey of area under potato and onion and their productions for the Agricultural Marketing Board.
- (v) Investigation of fodder problems
- (vi) Assessment of suitability of Crown Lands for agricultural development.

Staff and In-Service Training

18.57 The staff was further strengthened during the year. In the higher cadre 1 Animal Husbandry Officer and 1 Agricultural Superintendent were posted.

18.58 Three Technical Officers were promoted as Senior Technical Officers within the Division. One of them assumed the responsibility of the works with youth following the transfer of Associate Expert Mr. J. Admiraal to the Ministry of Economic Planning and Development. One reciprocal transfer took place between Extension Services Division and Experimental

Stations in the cadre of Senior Technical Officer; the new officer assumed the responsibility for the Information office. One Technical Officer who was posted in the Division was later transferred upon his appointment as Scientific Officer. 10 Field Assistants were posted to the Division and one was transferred to Agricultural Division. 25 Test Chemists from the Central Arbitration and Control Board were posted to the Extension Service Division during the intercrop season. After initial training in sugarcane cultivation, they were posted in the field for advisory work to sugarcane planters.

18.59 The Field Assistants attended a 2 days seminar at the University of Mauritius during which the Divisional Scientific Officer participated as one of the lecturers.

18.60 Dr. N. Bakkar, Livestock Production Expert of the F.A.O., organised two training courses on animal production, each of a duration of 18 weeks for the benefit of the Livestock Assistants of the Division of Animal Health and the Field Assistants of the Extension Service respectively.

XIX. Division of Veterinary Services

HEAD OF DIVISION: M. F. MOSAHEB, PRINCIPAL VETERINARY OFFICER

Artificial Insemination and Veterinary Aid Services

19.1 The activities of the Division of Veterinary Services comprise of performing Artificial Insemination, providing veterinary aids to cowkeepers, looking after the health of livestock of all Government Stations, carrying out Tuberculin Tests on herd cattle at Government Stations and Sugar Estates, quarantining both large and small animals, preparation of Poultry vaccines and carrying out *post mortem* examinations and diagnostic works at the Animal Health Laboratory, issuing import permits and enforcing the Animal Disease Ordinance.

19.2 The total number of Artificial Insemination performed during the year amounts to 10,118, out of which 673 have been done on Sundays and Public Holidays.

19.3 Both Friesian and Creole semen from bulls at Artificial Insemination Centre were used. Deep Frozen semen of Friesian and Charolais was imported from Kenya. Friesian semen was used in Moka and part of Flacq Districts and charolais semen was used on Ongole cows at Palmar Livestock Breeding Station. The average conception rate with both Creole and Friesian semen from the Artificial Centre was 56 per cent.

Animal Health

19.4 No cases of Heartwater were reported neither from the estate in the South where it was first diagnose in 1972 nor from any other part of the island. Trichomoniasis (*trichomonas gallinae*) was diagnosed for the first time in the cage birds (finches) of La Balise Aviary at Black River. Mortality amounted to 30 per cent. Tuberculin test was carried on sugar estate herds

and a total of 2,388 animals were tested out of which 91 reacted to the test, giving a percentage of 3.8 per cent. These animals were usually disposed of through slaughter.

Mineral deficiencies	...	644
Affections of the Udder	...	529
Difficult calvings	...	589
Digestive Disorders	...	871

Animal Health Laboratory

19.5 During the year a total of 3,448 specimens were received at the Laboratory. Of these specimens, 3,109 were subjected to Pathological, Bacteriological, Parasitological and Haematological examinations.

19.6 They included live animals, animal carcasses, blood, milk, water, faecal samples and skin scrapings and were submitted by Government Centres, Private Owners, and Police Authorities. Of the above 3,109 specimens, 873 were submitted by Government Centres as follows:

Poultry Breeding Centre	...	...	405
Palmar Livestock Breeding Station	...	...	80
Curepipe Livestock Breeding Station	...	...	134
Roche Bois Quarantine Station	...	...	41
Artificial Insemination Centre, DVS	...	...	27
Other Centres	...	...	188

19.7 Private owners submitted a total of 2,224 specimens and Police Authorities 24.

19.8 In addition, 379 specimens, including raw hide articles, stuffed animals, animal skins were submitted to the Laboratory, where they were sterilized prior to release.

Vaccine Production

19.9 No vaccine was imported from Madagascar and the following represent the number of doses of each of the vaccine produced at the Animal Health Laboratory and sold during the year 1973.

Type	(Unit doses)
New Castel Disease Vaccine	... 186,553
Fowl Pox Vaccine	... 230,625
Broster New Castle Disease Vaccine	... 127,837

Animal Quarantine Services

19.10 To ensure against the introduction of infectious/contagious diseases into Mauritius the provisions of the Animal Diseases Ordinance were rigidly applied to all imports of Livestock and livestock products. The Quarantine kennels, the catteries both at Reduit and the Mauritius Society for the Prevention of Cruelty to Animals, Rose Hill and the Poultry Quarantine Unit at Reduit and the Animal Quarantine Station at Roche Bois (near Port Louis) were maintained.

19.11 To ensure against the introduction of any diseases through the importation of live goats from Madagascar, the slaughter of these goats was restricted to the slaughter house at Roche-Bois which is under the control of a fully qualified Veterinary Surgeon. Likewise, cattle from Madagascar were slaughtered at the slaughter houses of Roche Bois, Rose Hill and Curepipe.

A. LIVESTOCK

Livestock and Livestock Products

19.12 Under the provision of the Animal Disease Ordinance, 40 ships and 69 aircraft carrying livestock were cleared by the staff of the Veterinary Services and all livestock whether for slaughter or breeding purposes was subjected to quarantine at the Quarantine stations. During the year following stock was received at the Quarantine stations:

<i>Country of Origin</i>	<i>Bullocks</i>	<i>Sheep</i>	<i>Goats</i>
Madagascar ...	1,370	—	—
Rodrigues ...	926	807	2,317
Australia ...	—	914	367
New Zealand ...	8	—	—
South Africa ...	8	—	—

19.13 In addition 710 cage birds from different countries were held in quarantine prior to release to importers. At Reduit and M.S.P.C.A., Rose Hill, 18 dogs and 5 cats imported from various countries were held in quarantine for a period of six months from the date of arrival. Further, 8,260 day old chicks from the United Kingdom, 33,357 from Canada and 1,215 from Holland were imported by various importers and 34 pigs from South Africa, 12 from Australia and 4 from St. Brandon were also imported.

B. LIVESTOCK PRODUCTS

19.14 During the year 1,620 imports permits and 396 landing permits were issued. All frozen meat landed was subject to veterinary inspection prior to release for sale. The following table summarises the import of livestock products including frozen meats, offals, by-products of abattoirs and prepared livestock feed:

	(lbs)
Frozen beef & beef products ...	947,705
Frozen mutton & offals & preparations ...	1,908,863
Frozen goat meat and offals ...	62,066
Frozen pork and pork products ...	270,409
Frozen poultry ...	296,994
Eggs ...	—
Frozen turkeys & ducks ...	51 294
Frozen rabbit ...	—
Livestock feed (poultry, pig, dog, rabbit, horse and pheasant and duck) ...	29,513,385
Fish meal for livestock feed ...	—
Bone meal for livestock feed ...	—
Meat Meal ...	300,000
Lucerne ...	—

Slaughter Data

19.15 During the year 2,475 calves, 160 cows (including of 31 slaughtered on humane ground) and 2,585 bulls of the milch breed were slaughtered, producing 1,086,484 lbs. of beef. In addition, 1,357 herd cattle and 854 bullocks imported from Rodrigues were slaughtered, yielding 532,778 lbs. of beef. 1,426 bullocks imported from Madagascar were slaughtered and produced 465,262 lbs. of beef.

19.16 Likewise, 24,110 lbs. of mutton and 253,721 lbs. of goat meat was produced in Mauritius and another 55,828 lbs. from 1,223 imported goats and sheep giving a total of 291,785 lbs. 153,051 lbs. pork was produced in the country, including pigs imported from Rodrigues. In these figures, offals and preparation are not included.

19.17 The slaughter house returns revealed the following average weight of imported and local cattle slaughtered during the year:

Local herd cattle ...	231 lbs.
Local milch cow ...	247 lbs.
Local bulls of milch breed ...	219 lbs.
Calves of local milch breed ...	194 lbs.
Rodrigues cattle ...	257 lbs.
Madagascar cattle ...	326 lbs.

19.18 The Principal Veterinary Officer, on behalf of the Minister of Agriculture and Natural Resources, authorised 3 week-ends for slaughter of unproductive females of the local milch breed. During the same period 210 permits were issued for the slaughter of males of the milch breed for wedding and religious ceremonies. During the year, 4 butchers were licensed to sell beef in meat shops licensed by the Ministry of Health.

Slaughter House Control

19.19 Under the Food Control Order, 129 permits were issued for slaughter of unproductive cows of the milch breed as against 835 in 1972. In addition, 31 animals of the milch breed were allowed slaughter on humane ground.

19.20 During the year 16 cases of illegal slaughter (including 2 heifers and 1 cow) of the milch breed and 2 stags and 1 goat were examined and certificates issued to the Police Department. Likewise, 10 cases of alleged cruelty to animals and 5 accident cases were examined and certificates issued to the Police Force.

19.21 From the Meat Inspection returns, 1 total and 104 partial seizures on account of bovine tuberculosis were reported among the Madagascar bullocks slaughter at Roches Bois, Rose Hill, and Curepipe Slaughter Houses, giving 7.4 per cent of T.B. cases among a total of 1,426 head slaughtered during the year.

19.22 In respect of the local stock of Zebu and milch animals, 14 seizures on account of bovine tuberculosis were reported, giving .2 per cent of T.B. cases among the total of 6,577 head slaughtered during the year.

Advisory Services

19.23 Officers continued to visit large and small livestock breeders for on-the-spot advice, and lectures delivered to Young Farmers.

Staff

19.24 The officer in charge, Dr. M. F. Mosaheb, returned from Australia after successfully completing his M.Sc. and was promoted to the post of Senior Veterinary Officer.

19.25 The Senior Veterinary Officer accompanied by the Veterinary Advisor, went on mission to Southern Africa in October 1973 for on the spot study of disease picture of these countries for eventual importation of live animals for slaughter.

19.26 Veterinary Officer Dr. Fokeer was sent by the Ministry to attend the Inter African Bureau of Animal Resources Conferences held at Kartoum in June 1973. Mr. M. Rangasamy joined the Division in September 1973 as Stock Inspector.

19.27 *Revenue.*

	Rs		Rs
Sale of Cattle	... 1,089.38	Veterinary fees	... 24,737.95
Quarantine Fees	... 21,013.85	Import Permit fees	... 1,552.
Miscellaneous	... 2,620.60	Adv. Account: Dogs	... 6,282.77
Drugs	... 8,769.38	Lease of cows	... 3,255.14
Sale of Milk...	... —	Sale of Vaccine	... 29,761.73

XX. Projects Implementation Division

HEAD OF DIVISION: T. M. NARAIN, DIVISIONAL SCIENTIFIC OFFICER

20.1 Since its inception in 1971 with a view to implementing agricultural development as appearing in the 4-Year Plan, activities in the following schemes were continued, viz:

- (1) The Northern Plain Irrigation Pilot Project
- (2) The Northern Plain Irrigation Project (I.W.P.)
- (3) The Small Wells Scheme.

NORTHERN PLAIN IRRIGATION PILOT PROJECT

20.2 Pipe laying works continued in the Project Area and was completed in July 1973. Pumps installation at the reservoir site was completed in July 1973.

20.3 The road system was redesigned, i.e. new roads were created and existing roads that were to be used were reconditioned. Extension of the road running away from the reservoir towards the North was completed to

facilitate irrigation operations. Some roads especially in the Northernmost and eastern sectors were built up or reconditioned even after December 1973. The planning consisted of a road system of 8 such roads running north and south of the reservoir site. The longest road is about $\frac{3}{4}$ mile long from end to end, and the road layout is of the extent of 5.5 miles in the Project Area. Every road has an hydrant placed at the junction where it crosses the main irrigation feeder line. Though some of the roads in the eastern sector of the Project was still under construction, it was possible to start trial irrigation operations in August 1973. Defects in pipelines were corrected and pressure relief valves were installed at both ends of the main 10" asbestos cement pipeline (a half mile pipeline) to operate at a pressure of about 130 lbs in -2. Subsequently it was found necessary to install 3 spring loaded pressure relief valves at each of the three submersible pumps at the sump of the reservoir site. This has diminished the danger of water hammers bursting pipes.

20.4 The project also has a system of lateral pipelines made up of 4" asbestos cement pipes for use by small sprinklers. Small hydrants are placed at regular intervals. In all 68 such hydrants have been installed.

20.5 Initially water for irrigation has been made available from one borehole situated at St. André about $1\frac{1}{2}$ miles from the reservoir site. The borehole yielded some $\frac{1}{2}$ cusec of water (an average of 180—200 gallons per minute). The water is fed through an 8" buried asbestos cement pipeline into a one million gallon capacity butyl rubber made reservoir placed centrally in the Project area.

20.6 Provision is also being made to link another borehole situated at about 3,000 ft. ($\frac{1}{2}$ mile) from the existing borehole to the latter. Tests carried out at the borehole indicated a water yield of more than a cusec. Consequently, the project of linking another borehole situated at Rouge Terre, $1\frac{1}{2}$ mile distant from the reservoir site had been abandoned, due to the low yield of water and the very rocky terrain.

20.7 For laying pipelines, boreholes, and road construction, the signed consent of 180 land owners was secured, the reservoir itself was constructed by Messrs. Esso Ltd. The office blocks, pipeline laying, road construction, one pump house at the borehole was carried out by the Development Works Corporation which acted as the contractor.

20.8 Estimates of damage to crops and lands due to pipelaying, road construction and borehole sites were also submitted to the Ministry of Housing and Lands with a view to compensate losses to land owners.

20.9 A Cooperative Society for Planters on the Project Area was set up to obtain the participation of all planters involved and their agreement to the land consideration necessary for the success of the scheme.

20.10 Acting on the suggestions of the planters committee, the Registrar of Cooperative Societies, Mr. H. Ramdin, was requested to prepare a bye-law, specially designed to group planters into the "Northern Plain Irrigation Pilot

Project Water Users' Cooperative Societies''. Ultimately every planter has formed part of that Society, which was registered on the 24th April 1973. Farmers have thereupon met frequently to discuss problems pertaining to irrigation and harvest. The project which consists of 215 arpents grouping 69 planters (big and small) was inaugurated in October 1973 by Dr. the Right Honourable Sir Seewoosagar Ramgoolam, Kt. M.L.A., Prime Minister.

20.11 Irrigation operations started immediately afterwards, most of the fields having been harvested by that time. Farmers were advised to fertilize their sugar cane fields not later than the 1st of December 1973. The Co-operative Society has a get together in late December 1973; the Minister of Agriculture, and Natural Resources and the Minister for Cooperatives and Cooperative Development were present.

20.12 With the onset of irrigation, many planters in the Project Area had uprooted their old ratoon canes very early in 1973 to start up new plantations before the beginning of irrigation. Two fifths of the Project Area had been replanted before October 1973.

20.13 The following Table shows the extent of virgin cane planted in 1973 with the impact of irrigation:

<i>Variety</i>	<i>(Area Arpent)</i>
M13/56	43A 50
M377/56	29A 50
S17	4A 25
M442/51	2A 50
M438/59	1A 25
TOTAL	81A 00

20.14 The next table shows the extent of food crop cultivation, in pure stand and in cane interrow by December 1973. It is assumed that one third of the area where intercropping is practised equals to the area in pure stand.

<i>Crop</i>	<i>Pure Stand (Arpent)</i>	<i>Interrow cropping (Arpent)</i>	<i>$\frac{2}{3}$ of inter- cropped Area (Arpent)</i>	<i>Total Full Crop (Arpent)</i>
Tomatoes	12.25	15.75	5.25	17.50
Maize	—	6.15	2.05	2.05
Tobacco	4.00	—	—	4.00
Bittergourd	—	1.00	0.35	0.35
Brinjal	0.50	—	—	—
Cucumber	1.90	0.60	0.20	2.10
Groundnut	0.50	—	—	0.50
Beans	2.20	5.60	1.85	4.05
Watermelons	0.50	1.00	0.35	0.85
Potatoes	—	0.10	0.03	00.3
TOTAL	21.85	30.20	10.08	31.93

20.15 During the running period of irrigation, it was found that droplets from the Target Master did not injure foodcrops provided that strict precautions are taken not to start up the Target Master directly on the crop, but in the opposite sugar cane fields or on rock piles, or on the road itself. The same precautions should be taken before the Target Master stops irrigating.

20.16 Mr. Chaillet was appointed Agronomist and Mr. Len Palmer from Huntings Technical Services also provided his valuable contribution to the start of the project.

THE NORTHERN PLAIN IRRIGATION PROJECT—IMMEDIATE WORKS PROGRAMME

20.17 The Huntings Technical Services group of Consultants appointed in May 1972, arrived in October of the same year and started working on the Stage II studies of the project. The Consultants completed their work in August 1973.

20.18 Concurrently an Immediate Work Programme (IWP) was recommended to be implemented. In brief it consisted of the following works:

- (a) Preparation of a base map (scale 1:2,500)
- (b) Reconditioning of the Nicolière Feeder Canal to diminish loss of water by seepage
- (c) Remodelling of existing structures
- (d) The setting of a weir at Bois Clair
- (e) The restructuring of the Pondard Weir
- (f) Construction on new diversion weirs (i) at Rivière Chevrettes (ii) at Rivière Vacoas
- (g) The planning of the Reticulation system for the 1st stage of the Northern Plain Irrigation Project over an area of 1,800 ha (9,550 A)
- (h) designing of Midlands dam
- (i) Conducting exploratory drilling along Nicolière Feeder Canal in order to find more water for the Northern Plains
- (j) The designing of the road network for the 1,800 hectares to be irrigated.

20.19 The Immediate Works Programme could not be implemented as all the recommended works required designs to be made. It was decided to approach consultants for preparing designs and estimating the costs as local engineers were fully occupied with other projects. Sir MacDonald and Partners submitted their proposals for undertaking the assignment and their engineers were to come in early 1974.

20.20 Repairs to the feeder canal was undertaken by the Central Water Authority to which Rs 800,000 had been allocated.

THE SMALL WELLS SCHEME

Objective

20.21 Following the decision to provide underground water to small areas (about 10 acres) not falling under the scope of the large irrigation projects twenty four (24) boreholes have been sunk in the following localities:

(a) Cottage	...	...	3
(b) St. Martin, La Ferme	...	...	2
(c) Roche Terre Goodlands	...	...	2
(d) Schoenfeld	...	...	17

Out of these 24 boreholes, three (3) have not yielded sufficient water for the irrigation of the unit, namely:

(i) St. Martin	...	...	2
(ii) Roche Terre Goodlands	...	...	2

Finance

20.22 Pumps and equipment designed to serve 18 boreholes were ordered in September 1973.

(2) The borehole of Mr. Jhundoo's estate at Petit Verger, Petite Rivière started operating as from March, 1973.

(3) The drilling rig and compressor ordered—October 1972 to speed up drilling operations arrived in September 1973.

(4) The La Ferme Agricultural Cooperative Marketing Society and the St. Martin Agricultural Cooperative Society inaugurated their boreholes in September, 1973.

XXI. Engineering Division

HEAD OF DIVISION: A. R. SATAR, AGRICULTURAL ENGINEER

Central Workshop

21.1 The servicing, maintenance of all vehicles, tractors and machinery of the Ministry were carried out at the Central Workshop. Complete service records were kept.

21.2 The number of servicings and repairs were as follows:

Vehicles	...	...	764
Tractors	...	...	127
Lawn mowers	...	...	97
Sprayers	...	...	67
Trailers	...	...	40
Pumps	...	...	13
Agricultural implements	...	...	45
Other minor works	...	...	195

Buildings

21.3 A number of buildings for the Ministry were completed and handed over as follows:

- (i) A fourth Quarantine Greenhouse at Reduit;
- (ii) An additional floor to the Extension building at Reduit for use by the Administrative Division. The construction of piggeries at Palmar L.B.S. was designed and supervised by the Agricultural Engineer.

21.4 The following were constructed in the Workshop:

- (i) Switch board for Livestock Feed Factory;
- (ii) Furniture for Finance and Fisheries Divisions;
- (iii) Fencing posts, gates, burglar proof structures and chimneys;
- (iv) Welding and other repairs of pipes for Northern Plaine Irrigation Pilot Project.

Planning Design and Advisory Service

21.5 The following were carried out:

- (i) Preparation of plans for Extension of Poultry Quarantine and supervision of the construction.
- (ii) Supervision of the Extension of the Poultry Dressing House.
- (iii) Preparation of plans and working Drawings of a cattle Feedlot at Richelieu Experiment Station.
- (iv) Supervision of pipe laying and building works at the Northern Plain Irrigation Pilot Project.

21.6 Technical advices on choice of machinery and equipment were provided to other divisions.

21.7 Lectures in Agricultural Engineering were delivered at the school of Agriculture of the University of Mauritius.

XXI. Field Services Division

HEAD OF DIVISION: I. FAKIM, AGRICULTURAL SUPERINTENDENT

22.1 The division as presently organised comprised three branches:

- (a) Land Settlement
- (b) Transport Branch
- (c) Livestock Feed Factory

LAND SETTLEMENT

22.2 There are in all eleven settlements under the control of the Ministry. They are situated at Petit Sable, Grand Sable, Crown Land Belle Vue, Richelieu, Terre Rouge, Palmar, Palmar Extension, Crown Land, The Vale, Plaisance, Bee Manique—Buffer Zone.

There are some 565 tenants in all the settlements and the number of holdings is 733. The area of each holding varies from 0.25A to 4 Arpents. Terre Rouge and Richelieu Settlements are supplied with irrigation water.

22.3 The Land Settlement Committee held one meeting during the year and several cases of transfer of holdings were considered. New tenants were selected and twenty four tenants were settled. As usual technical advice was given to the tenants and in general the holdings were satisfactorily cultivated. Collection of rent has improved but still a large amount of arrears has to be recovered. As usual foodcrops and vegetables are cultivated on all settlements; but tenants have a tendency to cultivate their holdings with sugar cane; however the policy to restrict sugar cane and to promote other agricultural diversification was maintained.

TRANSPORT SECTION

22.4 All vehicles of the Ministry are under the responsibility of this division. There are in all 80 vehicles comprising of 49 Jeeps and Cars and Land Rovers, 14 lorries and 17 tractors. Repairs of these vehicles are attended to by Engineering division of the Ministry. Lorries cater for the transport of stores, manure and animal feedstuffs to all stations. Tractors are used for local transport and for mechanical land preparation. Jeeps, Land Rovers and Cars are used for conveyance of officers, experts, field staffs and for collection of Paysheets.

LIVESTOCK FEED FACTORY

Manufacture of Animals Feedstuffs and Rice

22.5 During the year under review some 4,241.4 Tons of feeds were manufactured. The products used for these feedstuffs are wheat bran, maize, flour, groundnut cake, cotton seed cake, pollard, meat meal, fish meal, oats, lucerne meal, trelocovite, molasses, raw sugar, bone meal, dicalcium phosphate, and several vitamins and premix mixtures.

22.6 Thirteen different kinds of feedstuffs are manufactured for sale to the public and to Government Stations. These products are Chick Feed, Poultry Feed, Pig Grower Feed, Pig Starter Feed, Creep Feed, Cow Feed, Modified Cow Fed, Special Horse Feed, Horse Feed, Calf Feed, Bull Feed, Rabbit Feed and Mineral Mixture.

22.7 These feeds are sold at the Livestock Feed Factory at Richelieu as well as from the Extension Shop, Rose Hill.

22.8 Some 405 Tons of Paddy were supplied by rice growers. These were dried at the factory and then processed. Some 156 Tons of first grade rice were sent to the Ministry of Commerce and Industry.

Local Maize

22.9 Maize amounting to 9.1 Tons were purchased from planters.

22.10 The work at the factory has been very satisfactory and there was no breakdown.

XXIII. Fisheries Protection Service

HEAD OF DIVISION: E. CABON, SENIOR FISHERIES PROTECTION OFFICER

23.1 The duties of the Fisheries Protection Service are in the first instance to enforce the provisions of the Fisheries Laws and Regulations with a view to protecting the marine resources and the environment within the territorial waters of Mauritius and to advise on measures to be taken for a better organisation that may become necessary to improve the efficiency of the service with regard to increasing the fish production.

Staff Structure

23.2 The staff was composed of 1 Senior Fisheries Protection Officer in charge of the service assisted by 7 Fisheries Protection Officers, 16 Senior Fisheries Assistants and 36 Fisheries Assistants.

23.3 One Fisheries Protection Officer and one Senior Fisheries Assistant were working in the Research Division.

23.4 One Fisheries Assistant retired in December, 1973.

23.5 Provisions were made in the 1973-74 Estimates for the following additional posts: 2 Fisheries Protection Officers, 8 Senior Fisheries Assistants and 36 Fisheries Assistants.

23.6 Only two posts of Fisheries Protection Officers were filled at the end of the year.

23.7 These officers were looking after 160 miles of coastline and about 100 square miles of lagoons.

Organisation

23.8 The island was divided into 4 sectors viz:

1. Port Louis, Pamplemousses and Rivière du Rempart
2. Flacq
3. Grand Port
4. Savanne and Black River.

These sectors were put under the charge of the Protection Officers.

23.9 There are 13 Fisheries Control Posts around the Island from where the Senior Fisheries Assistant and the Fisheries Assistants operate. Each Post controls a coastline of about 10 to 15 miles long and a lagoon area of approximately 7 square miles.

23.10 These Posts were not properly equipped and staffed to cope with the evolution of the situation regarding the control of illegal fishing and the activities of more than 3,000 fishermen.

23.11 In order to alleviate the hardships which were inherent in the system of having the personal stationed for long periods in barrack accommodation on the coast, it was decided to operate a 24 hour shift system working basis. While half of the staff was on duty, the other half was away.

23.12 This new system of operation came into effect on the 1st of September 1973 and it was expected that all the vacancies in the ranks of the Senior Fisheries Assistants and Fisheries Assistants would have been filled by the end of the year, thus maintaining the same strength as before. But the recruitment of the additional staff did not take place.

23.13 It was found that this system was favourable to the personal but it was detrimental to the efficiency of the Service so long as the Fisheries Control Posts were not reinforced. Large areas could not be covered through the reduced staff and weakness of the operating squads.

23.14 Four jeeps were put into operation to give mobility to the staff but one of them was put out of use by an accident and had not been replaced at the end of the year.

23.15 Four jet boats and 11 radio telephone sets have been ordered.

Detection of Fraud

23.16 It is worthy to note that in spite of the defects in the organisation through want of adequate staff, efforts made by one and all had resulted in a greater number of contraventions being established as compared with that of the previous year.

Year	Cases Prosecuted	Convic- tions	Total number of Contraventions	Explo- sives	Illegal nets seized	Fines inflicted Rs.
1963 ...	213	199	279	22	84	6,657
1964 ...	144	230	185	19	76	5,915
1965 ...	89	112	140	9	36	3,911
1966 ...	270	306	303	31	98	8,057
1967 ...	171	197	218	16	72	5,075
1968 ...	112	233	200	7	66	4,747
1969 ...	162	236	257	11	96	7,120
1970 ...	239	366	413	10	99	10,015
1971 ...	247	280	428	13	143	54,080
1972 ...	88	90	202	3	50	10,862
1973 ...	95	122	291	5	100	5,140

Fish Landings

23.17 The total landings at controlled landing stations were as follows:

1965	1966	1967	1968	1969	1970	1971	1972	1973
1119	1129	—	940	1350	1040	935	938	916

23.18 Some of the 25 controlled fish landing stations were left occasionally unattended owing to the fact that members of the personnel had to concentrate on fraud repression.

A detailed statement on fish landed is annexed at 23.22.

Collection of Revenue

23.19 During the year the revenue collected was as follows:

	Rs
(a) Large, Canard and Gill net Licences ...	2,441.25
(b) Import licence	26.25
(c) Fees for stocking barachois ...	10.50
(d) Fees for the issue of duplicate identification badges for boats ...	4.20
TOTAL ...	2,482.20

Visit to Rodrigues

23.20 The Senior Fisheries Protection Officer visited Rodrigues to investigate the causes for the slow and steady decline in fish production in the island. This visit took place between the 11th September and the 19th September. It was concluded that the general decrease in fish production was due to the systematic destruction of immature fish by means of the small mesh nets, creepers "batatran" and fishing with the aid of artificial light to catch fish of any dimensions. It was found advisable to repeal the regulations governing the fisheries of Rodrigues and to replace them by the Laws and Regulations in force in Mauritius with amendments to conform with the conditions prevailing in Rodrigues. It was found essential to set up an efficient Fisheries Protection Service in Rodrigues to cover the whole Island.

23.21 At present, the staff is composed of 4 Fisheries Assistants working under the supervision of the Police Force at Port Mathurin. Though provisions were made in the 1973-74 Estimates for Rodrigues, there exists one vacancy as Senior Fisheries Assistant and one as Fisheries Assistant.

FISHBRIES PROTECTION SERVICE

YEARLY RETURN OF 1973

Categories

Species

Month	Gill Net	Cast Net	Large Net	Basket Traps	Lines	Lobster	Sardine	Octopus	Total	Octopus	Capitaine	D/Berry	Batardet	Rouget	Cayas	Cordonier	Mulet	Vieille	Licorne	O/Species	Lobster
January	2,588	253	—	27,534	18,014	432	—	10,816	59,637	10,816	1,284	1,862	400	2,019	2,956	4,627	1,537	4,451	12,768	16,485	432
February	3,030	103	—	21,063	18,991	408	—	11,063	54,658	11,063	1,363	1,691	274	2,116	2,163	4,785	1,734	4,681	6,118	18,262	408
March	2,670	616	40,392	23,545	23,713	435	—	15,726	107,097	15,726	4,537	3,613	3,112	3,987	2,845	17,943	11,851	6,024	7,306	29,718	435
April ...	2,031	246	23,098	25,047	19,560	295	1,480	12,178	83,935	12,178	3,115	2,018	1,540	3,852	1,769	12,725	5,874	4,293	8,371	27,905	295
May ...	3,873	386	29,024	38,535	22,970	378	7,704	15,354	118,224	15,354	3,278	2,673	1,688	5,837	2,856	14,790	6,230	5,450	18,594	41,096	378
June ...	2,138	393	17,836	18,936	14,517	245	2,889	8,191	65,125	8,191	1,729	1,357	667	3,265	1,673	11,892	3,196	3,575	6,714	22,641	245
July	2,436	274	21,463	24,085	17,758	417	1,409	10,234	78,076	10,234	2,287	1,602	907	4,243	1,900	11,694	4,730	4,248	9,005	26,809	417
August	2,235	667	17,745	20,133	14,829	254	3,083	9,181	68,127	9,181	1,420	1,398	975	3,494	1,548	8,449	5,165	3,654	5,451	27,138	254
September	2,676	35	21,499	19,880	18,049	320	1,979	11,123	75,561	11,123	1,510	1,680	1,209	3,802	2,043	10,791	6,074	3,721	5,529	27,759	320
October	4,129	82	—	26,348	25,338	587	—	13,703	70,187	13,703	1,616	2,123	571	2,975	2,506	6,039	1,620	5,747	4,911	27,789	587
November	3,696	180	—	26,760	23,610	759	—	10,671	65,676	10,671	1,414	2,205	446	2,724	2,499	5,152	1,121	5,361	8,143	25,181	759
December	2,505	81	—	31,542	23,975	963	—	10,323	69,389	10,323	2,145	2,662	441	2,636	3,209	5,429	884	5,573	11,905	23,219	963
	34,007	3,316	171,057	305,408	241,324	5,493	18,544	138,543	915,692	138,543	25,698	24,884	12,230	40,950	21,967	114,316	50,016	56,778	104,815	314,002	5,493

Average Tons

Nets	226,924 Kgs = 227
Basket Traps	303,408 Kgs = 303
Lines	241,324 Kgs = 241
Lobster	5,493 Kgs = 5
Octopus	138,543 Kgs = 139

XXIV. Rodrigues

SENIOR TECHNICAL OFFICERS: J. F. KWET ON, J. W. TOLBIZE

24.1 Hardly had Rodrigues recovered from the visit of cyclone Beatrice in December 1972 that three others followed, viz: Gertrude (30.1.73), Jessie (20.2.73) and Kitty (28.2.73). Those cyclones brought much rain and caused much damage to plantations and dams. Much top soil was washed down to the sea from the untterraced and deforested slopy lands. Thus, excessive rain was recorded during the first quarter of the year. On the whole, for the remaining part of the year, rainfall was below normal.

24.2 The unusually long drought which followed lasted up to December 74. Except for tropical depression Dalida, no cyclonic conditions prevailed over Rodrigues during December 73, January, February and March 74.

24.3 The provision of development works to the population helped to alleviate hardships after the passage of the four cyclones. On 27/12/73, the Agricultural Services employed 2,821 development workers.

CAPITAL PROJECTS

Land Development

24.4 Terracing works were carried out at the five following sites: Saponnaire, Jardin Mamzelle, Palissade, Mangles and Reposoir.

24.5 270 arpents of land were terraced and provided with main drains and 4 miles of new access roads. Approximately two thirds of this acreage were already leased to farmers when the work started. This output, lower than was predicted in the plan of operations, is due mainly to the fact that much auxillary works were involved in making the terraces strong enough to stand the ravages of cyclones and thus making them of a more permanent nature.

24.6 26 miles of existing agriculture access roads rendered impracticable by the cyclones were repaired and about 8 miles of these were provided with side drains.

24.7 The Solitude Rock Fill Dam was completed and was functioning immediately after the laying of a new pipeline to Crève Coeur and English Bay. The down stream face has still to be consolidated with cement.

24.8 At Anse Raffin the rock fill dam had reached a height of 27 ft. and that of St. Louis 22 ft.

24.9 The reservoirs at Graviers and Brulé were almost completed.

24.10 14,000 ft. of new pipe lines were laid at Crève Coeur, Mont Tonnerre and Mangles.

Livestock Breeding Centres.

24.11 The livestock Breeding Centre at Batatran which had been closed was re-opened in December 1972. Most of the pastures around, which had been terraced for cultivation, were re-converted into paddocks.

Pasture Development.

24.12 46 arpents were established with Kikuyu and Pangola grasses at St. Gabriel Livestock Breeding Centre, where normally rainfall is heaviest on the island.

Re-afforestation

24.13 191 arpents of new land were re-afforested. Weeding in established plantations was done on 442 arpents. Replanting was carried out on 15 arpents and recruiting on 288 arpents. The species planted were mainly Eucalyptus, Filao, Tecoma, Mahogany and Pongam.

Co-operative Marketing and Production

24.14 In order to stop mortality of pigs due to excessive exposure to sunlight, it was considered necessary to provide the pig pens at Port Mathurin with a permanent roof. Concrete columns and beams were added to the pens.

The cold room 10 ft. $\times$ 10 ft. $\times$ 10 ft. which was not being used at Citronelle was brought down to the Port Mathurin Market; where it is being used by the Fishermen's Co-operative Society for the marketing of fresh fish.

Fishing Development

24.15 The new deep-sea fishing boat 35 ft. $\times$ 11 ft. and provided with a 45 H.P. Engine, was launched.

24.16 15 young fishermen were trained by the Fishermen's Co-operative for deep sea fishing. The society caught and marketed 38 tons of fish in the form of salted fish and fresh fillets, which were all exported to Mauritius.

24.17 Spider crab fishing in the deep sea was tried and the results seemed to be encouraging. Shortly afterwards, this was given up because of lack of materials and equipments. Resumption of the trials is being contemplated. The flesh of the spider crab is said to be as tasty, if not tastier than that of the mud crab, which is fished inside the lagoons.

Production and Marketing

24.18 The following were the exports to Mauritius:—

<i>Cattle</i>	<i>Pigs</i>	<i>Sheep/goats</i>	<i>Onions</i>	<i>Garlic</i>
935 head	3,966 head	3,124 head	632 tons	6 tons
	<i>Fowls</i>	<i>Salted Fish</i>		
	826	<i>Dried Octopus</i>		
	crates	3,527 bales or		
		264 tons		

24.19 So far, 1973 was the year which saw the highest prices obtained for Rodriguan Livestock. The approximate values of the exports were:

	Rs
935 cattle at Rs 1,200 per head	1,122,000
3,966 pigs at Rs 250 per head	991,500
3,124 sheep / goats at Rs 130 per head	406,120
632 tons onions at Rs 800 per ton	505,600
6 tons garlic at Rs 1,100 per ton	6,600
826 crates of fowl at Rs 520 per crate	429,520
3,527 bales salted fish / Dried Octopus at Rs 300 per bale	1,058,100
	4,619,440

Animal Statistics

24.20 Balances at 31/12/73.

Station	Cattle				Total
	Adults		Young		
	male	female	male	female	
Batatan	1	16	4	14	35
Oyster Bay	2	24	10	13	49
St. Gabriel	2	16	14	32	64
Maréchal	13	23	12	24	72
Bay Topaz	1	26	10	18	55
TOTAL	19	105	50	101	275

24.21 There were 95 calvings producing 43 male and 52 female calves, 5 cows, 4 heifers, 28 bullocks and 7 bull calves were sold to farmers.

Death among calves up to weaning age was 7.3 per cent.

Station	Pigs				Total
	Adults		Young		
	male	female	male	female	
St. Gabriel	3	16	27	41	87
Maréchal	3	8	7	15	33
Bav Topaz	4	15	37	47	103
TOTAL	10	39	71	103	223

24.22 There were 55 farrowings producing 374 piglets or 6.8 per litter, with 85 per cent survival to weaning age. 256 piglets were sold to farmers.

4 old and sterile boars, and 20 similar sows were sold by auction.

Sheep Station		Adults		Young		Total	
		male	female	male	female		
Crab Island	...	3	42	16	11	72	
Oyster Bay	...	2	13	3	10	28	
TOTAL		...	5	55	19	21	100

62 lambs were born. 34 rams and 8 ewe lambs were sold to farmers as breeding stock.

APPENDIX I

Staff

(as at 31st December, 1973)

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Permanent Secretary ...	R. Burrenchobay, B.Sc. Agric. (Edin.)	
Principal Assistant Secretary	L. Purmessur B.Sc. Econ. (London)	
Chief Agricultural Officer	B. D. N. Roy, B.Sc (Wales), Dip. Agric. (Maur.)	
Veterinary Adviser ...	J. D. Shuja, O.B.E. M.R.C.V.S.	On contract
Principal Agricultural Officer (2)	K. Lutchmeenaraidoo B.Sc Agric. (Reading), Dip. Agric. (Maur.) R. J. S. Moutia, D. Phil. (Gauhati) B.Sc. Hort. (London) Dip. Agric. Economics (Oxford) City and Guilds (Sugar Mau- facture) 1st Class Cert. (London), Dip. Agric. (Maur.)	

ADMINISTRATIVE AND FINANCE DIVISIONS

Administrative Officer (3)	R. M. Hurdowar, B.A. (Hons.) (East Africa), D.P.A. (Maur.) A. I. Oozeerally A. Diouman	
Principal Finance Officer	S.P.R.D.D. Davay	
Senior Executive Officer (2)	A. Stephen ...	... 1 vacant

In addition there were:—

6 Higher Executive Officers	
9 Executive Officers	
2 Higher Clerical Officers	
34 Clerical Officers	
14 Clerical Assistants	
1 Senior Stores Officer	} Paid from the Vote of the Ministry of Finance
1 Assistant Stores Officer	
3 Stores Assistants	
3 Confidential Assistants	
16 Typists	
1 Senior Messenger	Vacant
1 Head Office Attendant	Vacant
16 Office Attendants	

APPENDIX I—*continued*

AGRICULTURAL DIVISION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Divisional Scientific Officer	A. L. Owadally, Ph.D. Agric. Nottingham, B.Sc. (Hons.) Agric. Botany (Wales) Dip. Agric. (Maur.)	
Scientific Officer (Agro- nomy) (9)	P. Oogarah, B.Sc. Agric. (New Zealand), Dip. Agric. (Maur.) K. Ramdaursingh, B.Sc. (Hons.) Agric. and A.H. (Uttar Pradesh), Dip. Agric. (Maur.) J. G. Chaillet, B.Sc. (Hons.) Nottingham, Dip. Agric. (Hons.) (Maur.) J. R. N. Govinden, B.Sc. (Agric.) (Hons.) (Crop Science) (Ibadan) S.N. Naidu, B.Sc. (Hons.) Agric. and Dip. Agric. (Maur.) P. P. Vyapoory, B.Sc. Agric. and Dip. Agric. (Maur.)	2 vacancies
Scientific Officer (Horti- culture) (2)	I. Rajkomar, B.Sc. (Hons.) Agric. (Udaipur) M. Ramtohul, B.Sc. (Hons.) Agric. and A.H. (Uttar Pradesh)	

ANIMAL PRODUCTION DIVISION

Divisional Scientific Officer Animal Husbandry	J. A. C. Delaitre, B. Agric. (N. Zealand)	
Scientific Officer (Animal Husbandry) (3)	B. Hulman, B.Sc. Agric. (Allahabad) G. Naidu, B.V.Sc. (India) L. K. Napoon, B.Sc. (Hons.) Agric. (Ife, Nigeria)	

In addition there were:—

- 6 Technical Officers (Agri-
culture)
- 4 Field Assistants

APPENDIX I—*continued*

FISHERIES DIVISION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Divisional Scientific Officer (Fisheries)	J. D. Ardill, M.Sc. Oceanography (Canada), B.Sc. (Hons.) Zoology (St. Andrews)	
Scientific Officer (Fisheries) (2)	A. S. Gopaul, B.Sc. (Hons.) Zoology (Vancouver), Dip. Agric. (Maur.)	1 vacancy

In addition there were:—

- 1 Senior Technical Officer (Agric.)
- 3 Technical Officers (Agric.)
- 5 Field Assistants

PLANT PATHOLOGY DIVISION

Divisional Scientific Officer (Plant Pathology)	G. M. Lallmahomed, Post Graduate Cert. in Nematology (Wageningen), B.Sc. (Hons.) Agric. Biology (Ibadan), M.I. Biol., Dip. Agric. (Maur.)
Scientific Officer (Plant Pathology) (2)	J. Bucha, B.Sc. (General) (Auckland) M. Pillay, B.Sc. (Hons.) Botany (Delhi)

In addition there were:—

- 3 Technical Officers (Scientific)
- 10 Laboratory Attendants

AGRICULTURAL CHEMISTRY DIVISION

Divisional Scientific Officer (Agricultural Chemistry)	S. Belcourt, Post Graduate Dip. Agric. Sc. (Wales), B.Sc. (Agric. Chem.) (Wales), Diploma Agric. (Maur.)
Scientific Officer (Agricultural Chemistry) (3)	J. E. Pablot, B.Sc. (General) (London) L. C. Lam Thuon Mine, B.Sc. (Chemistry) (London) P. Mardamootoo, M.Sc. Chemistry, B.Sc. (Hons.) Chemistry (Delhi University)

In addition there were:—

- 5 Technical Officers (Scientific)
- 3 Field Assistants
- 7 Laboratory Attendants

APPENDIX I—*continued*

ENTOMOLOGY DIVISION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Divisional Scientific Officer (Entomology)	M. J. L. Monty, B.Sc. (Hons.) Entomology (Queensland), Dip. Agric. (Maur.)	
Scientific Officer (Entomology) (2)	A. Joomaye, B.Sc. (Hons.) Zoology & Botany (East Africa)	On study leave
	M. Ramsamy, B.Sc. Gen- eral (London)	

In addition there were:—

- 3 Technical Officers (Scientific)
- 1 Field Assistant
- 4 Laboratory Attendants

EXPERIMENT STATIONS

Agricultural Superintendent	S. Baguant
Senior Technical Officer (Agric.) (7)	D. Reetoo
	C. S. Amide, Dip. Agric. (Maur.)
	S. Y. E. Doomun
	A. A. M. Osman, Dip. Agric. (Maur.)
	L. F. M. Monneron
	M. Goolamhossen, Dip. Agric. (Maur.)
	R. Gohabar, B.Sc. Agric. (Sind)

In addition there were:—

- 6 Technical Officers (Agriculture)
- 9 Field Assistants
- 30 Agricultural Overseers
- 6 Agricultural Assistants

LIVESTOCK BREEDING STATIONS

Agricultural Superintendent	J. J. A. Ferrière
Senior Technical Officer (Agriculture) (2)	Y. Aumjaud, Dip. Agric. (Maur.)

In addition there were:—

- 3 Technical Officers (Agriculture)
- 2 Field Assistants
- 3 Agricultural Overseers
- 3 Livestock Assistants
- 2 Agricultural Assistants

EXTENSION SERVICE DIVISION

Divisional Scientific Officer (Agriculture)	L. R. Brunet, Dip. Agric. Extension (Queensland) B.Sc. Agric. (Reading) Dip. Agric. (Maur.)
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APPENDIX I—*continued*

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Scientific Officer (Agronomy)	S. P. Mauree, B.Sc. Agric. (Madras)	
Agricultural Superintendent	M. Sooltangos, Dip. Agric. (Maur.)	Seconded to Ministry of Coop. & C.D.
Senior Technical Officer (Agriculture) (8)	S. P. Vythilingum, Dip. Agric. (Maur.) I. H. Sassa, Dip. Agric. (Maur.) J. C. Honglin, Dip. Agric. (Maur.) M. John Chuan, Dip. Agric. (Maur.)	

In addition there were:—

- 14 Technical Officers (Agric.)
- 33 Field Assistants
- 4 Agricultural Assistants
- 1 Publicity Assistant

ANIMAL HEALTH DIVISION

Principal Veterinary Officer	M. F. Mosaheb, M.Sc. Tropical Veterinary Science (Queensland), B.V. Sc. & A.H. (Punjab)
Veterinary Officer (3)	... R. C. S. Fokeer, B.V.Sc. & B.Sc. Animal Husbandry (Bombay) Z. Heetun, D.V.M. (West Pakistan Agricultural University) L. L. Beeharry, B.V.Sc. & A. H. (Uttar Pradesh)
Laboratory Technologist (2)	L. H. R. Maurice, Dip. Agric. (Maur.) M. N. Pyndiah, A.I.M.L.T.
Senior Technical Officer (Livestock) (2)	L. R. Pascal C. A. Adelson

In addition there were:—

- 9 Technical Officers (Livestock)
- 3 Technical Officers (Scientific)
- 28 Livestock Assistants
- 3 Laboratory Attendants

PROJECTS IMPLEMENTATION DIVISION

Divisional Scientific Officer (Agriculture)	T. M. Narain, M.Sc. Agric. Extension (Reading), B.Sc. Agric. (Reading) Dip. Agric. (Maur.)
Agricultural Superintendent	B. Nundloll

APPENDIX I—*continued*

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
In addition there were:—		
	1 Surveyor	
	1 Junior Surveyor	
	1 Surveyor Assistant	
	1 Junior Draughtsman	
	1 Printing Machine Operator	
FIELD SERVICES DIVISION		
Agricultural Superintendent	M. I. Fakim, Dip. Agric. (Maur.)	
In addition there were:—		
	6 Senior Technical Officers (Scientific)	
	3 Laboratory Attendants	
ENGINEERING DIVISION		
Agricultural Engineer (2)	L. Li Pi Shan, B.Sc. Agric. Engineering (Sask), Dip. Agric. (Maur.)	On leave
	A. R. Satar, B.Sc. Agric. Engineering (Israël), Dip. Agric. (Maur.)	
Assistant Agricultural Engineer	M. Morad, Dip. Agric. (Maur.)	
ARBITRATION AND CONTROL BOARD		
Registrar ...	A. A. Aumeerally, B.Sc. Sugar Engineering & B.Sc. Chemical Engineering (Louisiana State University), Dip. Agric. (Maur.)	
Assistant Registrar and Chief Chemist	—	Vacant
Accountant ...	—	Vacant
Chemist (Arbitration & Control Board)	I. D. Nawoor, B.Sc. General (Wales) B.Sc. (Hons.) Chem. (Wales)	
Assistant Chemist ...	R. Thélemaque, Dip. Agric. (Maur.)	
In addition there were:—		
	2 Investigational Officers and Weighbridge Inspectors	
	6 Senior Test Chemists	
	38 Test Chemists	
	2 Laboratory Attendants	
	1 Test Chemist for crop period	

APPENDIX II

Composition of Principal Boards and Committees

The composition of the principal boards and committees for the year 1973 was as follows:

AGRICULTURAL MARKETING BOARD

Mr. T. Callychurn—*Chairman*

The Chief Agricultural Officer (representing the Ministry of Agriculture and Natural Resources)—*Vice Chairman*

Official Members

The Financial Secretary or his representative (representing the Ministry of Finance)

The Principal Assistant Secretary, Ministry of Commerce and Industry or his representative (representing the Ministry of Commerce and Industry)

The Registrar of Cooperative Societies or his representative.

Unofficial Members

Mr. S. J. S. Fareed

Mr. J. Kooraram

Mr. L. Lan Fat Po

Mr. P. Maureemootoo

Mr. M. K. Ng Wong Hing

Mr. S. Ragnuth

Mr. L. Ramdin, M.B.E.

BOARD OF AGRICULTURE, FISHERIES AND NATURAL RESOURCES*Ex-Officio Members*

The Permanent Secretary, Ministry of Agriculture and Natural Resources—*Chairman*

The Conservator of Forests—*Vice-Chairman*

The Deputy Financial Secretary

Members of the Legislative Assembly

The Honourable M. Fakira, M.L.A.

The Honourable R. Devienne, M.L.A.

The Honourable J. Teeluck, M.L.A.

The Honourable C. Roussety, M.L.A.

Representatives of Millers

Mr. S. Dupont de Rivaltz de Saint Antoine

Mr. R. Antoine

Representatives of Planters

Mr. R. Ducler des Rauches

Mr. B. Boolakee

APPENDIX II—*continued*

Representative of the Chamber of Agriculture

Mr. L. K. Garthwaite

BOARD OF EXAMINERS FOR THE REGISTRATION OF AGRICULTURAL CHEMISTS

Mr. K. Lutchmeenaraidoo, Principal Agricultural Officer—*Chairman*

Mr. C. Vignes } Nominated by the *Société de Technologie*

Mr. J. D. de R. de St. Antoine } *Agricole et Sucrière de Maurice*

Mr. S. Belcourt, Chemist, Ministry of Agriculture and Natural Resources

Mr. S. Boojedhur, Lecturer in Chemistry, School of Agriculture, University of Mauritius

Mr. A. Aumeerally, Assistant Registrar and Chief Chemist, Cane Planters and Millers Arbitration and Control Board, Ministry of Agriculture and Natural Resources

CANE PLANTERS AND MILLERS ARBITRATION AND CONTROL BOARD

Mr. L. E. Venchard, Solicitor-General—*Chairman*

Mr. J. North-Coombes }
Mr. H. Koenig } Millers' Representatives

Mr. R. Ducler des Rauches }
Mr. B. Ramphul } Big Planters' Representatives

Mr. L. Mungur }
Mr. G. Ramnarain } Small Planter's Representatives

CANE RELEASE COMMITTEE

The Director, Mauritius Sugar Industry Research Institute—*Chairman*

The Chief Agricultural Officer

The Registrar, Cane Millers Arbitration and Control Board

The Senior Plant Pathologist, Agricultural Services

The Chief Plant Pathologist, M.S.I.R.I.

The Biometrician in charge of Plant Breeding, M.S.I.R.I.

Honourable R. Devienne, M.L.A.

A representative of the Mauritius Sugar Producers' Association

A representative of the Mauritius Cooperative Agricultural Federation

A representative of the Mauritius Cane Growers' Association

A representative of the Mauritius Cane Planters' Association

FISHERIES COMMITTEE

Honourable L. Badry, M.L.A.—*Chairman*

Mr. J. Ardill, Fisheries Officer

Honourable M. Fakira, M.L.A.

A representative of the Mauritius Fishing Development Cooperative Ltd.

A representative of the "Association des Pêcheurs Professionnels de l'Ile Maurice"

A representative of the Ministry of Commerce and Industry

A representative of Net Fishermen

A representative of the Limuria Fishing Enterprises Ltd.

A representative of the Morne Anglers' Club.

APPENDIX II—*continued*

FOODCROPS INSURANCE COMMITTEE

The Chief Agricultural Officer—*Chairman*

The Manager, Cyclone and Drought Insurance Board

A Representative, Agricultural Marketing Board

A Representative, Mauritius Cane Growers' Association

A Representative, Mauritius Cane Planters' Association

A Representative, Mauritius Sugar Producers' Association

A Representative, Chamber of Agriculture

A Representative, Mauritius Agricultural Marketing Cooperative Federation Ltd.

A Representative, Ministry of Cooperatives and Cooperative Development.

A Representative, Mauritius Sugar Industry Research Institute

A Representative, Ministry of Economic Planning and Development

IRRIGATION COMMITTEE

The General Manager, Central Water Authority—*Chairman*

The Chief Agricultural Officer or his representative

The Manager, Medine S.E. or his representative

The Manager, Solitude S.E. or his representative

The Director, M.S.I.R.I. or his representative

The General Manager, Central Electricity Board or his representative

A representative of the Mauritius Cooperative Agricultural Federation Ltd.

Mr. L. Desvaux de Marigny

Mr. R. Balgobin

Honourable C. Roussety, M.L.A.

LAND SETTLEMENT COMMITTEE

The Chief Agricultural Officer or his representative—*Chairman*

The Senior Agricultural Officer (Extension)

A representative of the Ministry of Housing, Lands and Town and Country Planning

The Principal Assistant Secretary, Ministry of Cooperatives and Cooperative Development or his representative

The Officer in charge of Land Settlement

Mr. S. Jogoo

Mr. N. Gunpath

Honourable G. Teeluck, M.L.A.

APPENDIX II--*continued*

MAURITIUS SUGAR INDUSTRY RESEARCH INSTITUTE EXECUTIVE BOARD

Nominated Members

A representative of the Ministry of Agriculture and Natural Resources

A representative of the Ministry of Finance

A representative of the Ministry of Economic Planning and Development

Appointed Members

Mr. J. M. Paturau, C.B.E.—Representative of the Chamber of Agriculture

Mr. J. E. Series

Mr. S. Dupont de Rivaltz de St. Antoine } Representatives of owners of sugar-

Mr. G. Langlois } cane estates with factories

Mr. C. Rouillard—Representative of large planters

Mr. G. Beeharry }

Mr. R. Seeruttun } Representatives of small planters

SUGAR INDUSTRY REHABILITATION FUND COMMITTEE

Government Officers

The Principal Assistant Secretary, Ministry of Agriculture and Natural Resources—*Chairman*

The Registrar, Cane Planters and Millers Arbitration and Control Board

Nominated by the Chamber of Agriculture

Mr. A. P. Dalais

Mr. J. Dhowtall

Mr. P. Ducler des Rauches

Mr. J. M. A. Harel

Mr. E. P. G. White

SUGAR MILLERS REHABILITATION FUND COMMITTEE

Government Officers

The Principal Assistant Secretary, Ministry of Agriculture and Natural Resources—*Chairman*

The Registrar, Cane Planters and Millers Arbitration and Control Board.

Nominated by the Chamber of Agriculture

Mr. A. P. Dalais

Mr. P. Dinan

Mr. J. L. E. Rouillard

Mr. E. P. G. White

APPENDIX II—*continued*

SUGAR PLANTERS REHABILITATION FUND COMMITTEE

Government Officers

The Principal Assistant Secretary, Ministry of Agriculture and Natural Resources—*Chairman*

The Registrar of Cooperative Societies or his representative

Representative of the Chamber of Agriculture

Mr. I. Roy

Representative of the Sugarcane Planters Association

Mr. S. Gaya, O.B.E.

Representative of the Cane Growers' Association

Mr. R. Sauzier

Representatives of the Mauritius Cooperative Agricultural Federation Limited

Mr R. Hurday

Mr. J. Roodhurmun, M.B.E.

TEA CONTROL BOARD

Ex-Officio Members

The Chief Agricultural Officer—*Chairman*

The Deputy Financial Secretary

Members appointed by the Minister

Mr. A. Hardy—Representative of the Chamber of Agriculture

Mr. L. Ramdin, M.B.E.

Mr. L. P. de Maroussem

Mr. F. North Coombes

Mr. C. Govinda

Mr. H. R. K. Aubdool

Mr. V. Govinden, M.B.E.

Mr. D. Gungadeen

} Representatives of Manufacturers

} Representatives of Planters

} Three other persons

TEA DEVELOPMENT AUTHORITY

Mr. J. Pilot—*Chairman*

The Principal Assistant Secretary, Ministry of Agriculture and Natural Resources (representing the Minister of Agriculture and Natural Resources)—

Vice-Chairman

The Chief Agricultural Officer

APPENDIX II—*continued*

The Registrar of Cooperative Societies

The Chairman, Tea Control Board

Mr. D. Soopramanien, Assistant Financial Secretary (representing the Ministry of Finance)

Mr. L. Ramdin, M.B.E. (representing the Chamber of Agriculture)

Mr. L. Mandhub (representing the Federation of Credit and Tea Marketing Cooperative Societies)

Mr. P. White

TOBACCO BOARD

The Principal Agricultural Officer—*Chairman*

The Commissioner of Excise—*Vice-Chairman*

The General Manager of the Board

The General Manager, British American Tobacco (Mauritius) Ltd. or his representative

The Managing Director, Amalgamated Tobacco Corporation (Mauritius) Ltd. or his representative

Mr. I. C. Gunness

Mr. A. G. Rey

Mr. S. Butan

Mr. O. Maudarbaccus

Mr. D. Gungadeen

Mr. I. N. Roy

Mr. B. Mahadoo

APPENDIX III

Legislation

Acts

- | | |
|--------------------|---|
| No. 2 of 1973 ... | The Cyclone and Drought Insurance Fund (Amendment) Act, 1973 |
| No. 31 of 1973 ... | The Rose Belle Sugar Estate Board Act, 1973 |
| No. 37 of 1973 ... | The Tobacco Production and Membership (Amendment) Act, 1973 |
| No. 41 of 1973 ... | The Tea Industry Control (Amendment) Act, 1973 |
| No. 46 of 1973 ... | The Cane Planters and Millers Arbitration and Control Board (Amendment) Act, 1973 |
| No. 65 of 1973 ... | The Cyclone and Drought Insurance Fund (Amendment No. 2) Act, 1973 |

APPENDIX III—*continued**Government
Notices Nos.*

22	...	The Tea Development Authority (Levy) Regulations, 1973
23	...	The Mauritius Agricultural Marketing (Controlled Products) (Amendment) Order, 1973
28	...	The Mauritius Agricultural Marketing (Controlled Products) (Amendment) Order 1973
47, 100 & 140	...	The Mauritius Agricultural Marketing (Additional Prices) Orders, 1973
94	...	The Mauritius Agricultural Marketing (Controlled Products) (Amendment) Order, 1973
97 & 125	...	The Mauritius Agricultural Marketing (Prices and Quantities) (Amendment) Order, 1973
105	...	The Mauritius Agricultural Marketing (Cess) (Amendment) Regulations, 1973
144	...	The Animal Diseases (Amendment) Regulations, 1973
169	...	The Mauritius Sugar Industry Research Institute (Rate of Cess) (Amendment) Order, 1973

APPENDIX IV

**List of Publications and Contributions to Literature by Officers
of the Agricultural Services during 1973**

<i>Name of Author</i>	<i>Title of Paper</i>	<i>Name, Vol. No. Page of Periodical in which published</i>
1. G.M. Lallmahomed	Occurrence of rice blast in Mauritius.	F. A. O. Plant Protection Bulletin, 21 (4): 92-93.
2. I.D. Nawoor	La méthode employée par le "Cane Planters & Millers Arbitration & Control Board" pour le paiement de la canne a Maurice.	Revue Agricole et Sucrière de l'Ile Maurice 1973, No. 32 p. 325-330.
3. J. Monty	Rearing the Natal Fruit-Fly in prelaboratory.	Revue Agricole et Sucrière de l'Ile Maurice 1973, No. 52 p. 133-135.

APPENDIX V

Conversion Table

1 Arpent	...	...	1.043 acres
1 Gaulette		...	10.61 feet
1 Metric Ton		...	1,000 kilos
1 Long Ton		...	1,016 kilos
1 Pound Avoirdupois			454 grams
1 Kilo	...	...	1,000 grams
1 Hundredweight		...	50.803 kilos
1 Cord	...	...	92.82 cubic feet
1 Imperial Gallon		...	4.45 litres
1 Rupee	...	...	7.5 pence

